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ABSTRACT

A study was done of Summer Research Opportunity Programs (SROPs) sponsored by graduate schools across the nation to encourage minority undergraduate students to pursue academic careers. Eight United States colleges and universities were selected for the study: Purdue University (Indiana), University of California at Los Angeles, Stanford University (California), Massachusetts Institute of Technology, Temple University (Pennsylvania), Cornell University (New York), University of Illinois at Urbana-Champaign, and Howard University (District of Columbia). All have SROPs as well as graduate departments that have enrolled alumni of these programs. At each institution two SROP alumni were profiled (one a beginning doctoral student and another advanced candidate), along with at least one faculty member who had served as advocate and mentor to the students, and an administrator who managed the SROP. The report provides narrative summaries of each interview with a photograph of the individual and personal and academic data appearing at the beginning. An appendix is a directory of SROP programs across the nation. (JB)

ED 365 198

Enhancing the Minority Presence in Graduate Education V

SUMMER RESEARCH OPPORTUNITY PROGRAMS

Voices and Visions of Success in Pursuit of the Ph.D.

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Nancy A. Gaffney, CGS Editor

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Enhancing the Minority Presence in Graduate Education V

SUMMER RESEARCH OPPORTUNITY PROGRAMS

Voices and Visions of Success in Pursuit of the Ph.D.

COUNCIL OF GRADUATE SCHOOLS

With Support From The Ford Foundation of New York

Margaret Daniels Tyler
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FOREWORD

Undergraduate students who have the opportunity to participate directly in research often find the experience a pivotal one in their consideration of what kind of career to pursue. For many, it is the first experience to work with faculty outside of the classroom, and the enthusiasm for research, coupled with the idea of being a colleague and making a contribution to the solution of an interesting problem, are stimulating and thought-provoking. Students who have had no idea of what it means to do research find themselves seriously considering going to graduate school to prepare for a research career. Their faculty mentors play a vital role in getting them on the right track, and in many cases, eventually serve as their graduate advisors.

The only way to really sense the dynamic nature of this process—the uncertainties, the new relationships, the introspection, the triumphs, and the satisfaction of achieving—is to listen to what the participants have to say about their experiences. That is what this book is about. It is a tribute to the dedication of those whose stories you will read, and we hope it will be an inspiration for others to follow in their footsteps.

Jules B. LaPidus
President
Council of Graduate Schools
1993

ABSTRACT

The number of African American, Mexican American, Native American (Alaskan Natives and American Indian), and Puerto Rican students who enter Ph.D. programs is alarmingly low, the result of a confluence of factors at successive points along their educational pathways. In 1992, as an example, American Indians earned fewer than one percent of the doctorates in any science or engineering field; Blacks as well as Hispanics earned fewer than four percent of the doctorates in these fields. This situation, when viewed in the context of demographic growth projections for these groups, is especially disturbing to those educators and policy makers committed to equity in higher education.

In the last decade, there has been considerable growth in the number of Summer Research Opportunity Programs (SROP) sponsored by graduate schools across the nation as part of their efforts to encourage young students of color to pursue academic careers. SROP initiatives identify students during their undergraduate programs to encourage them to pursue graduate degrees. The model involves a variety of strategies, including hands-on research under the guidance and direction of a faculty mentor. Many of the programs that began in or before 1986 have flourished, and are now poised to yield the fruits of their labor—Ph.D. recipients.

Eight United States colleges and universities, representing diverse graduate institutions, were selected for this study. All of these institutions have SROP's as well as graduate departments that have enrolled the alumni of these programs. At each institution, two SROP alumni are profiled (one beginning doctoral student and another advanced candidate), along with at least one faculty member who has served as an advocate and mentor to the students, and an administrator who manages the SROP.

SROP initiatives represent the tangible commitment of faculty and staff to catalyze interest and expand opportunities for students of color while simultaneously building personal and institutional relationships that should secure pathways for these students while pursuing the Ph.D. Knowledge about the values and experience of SROP participants will help to inform current practice. In addition, the current emphasis on the *identification* of students with ability will be broadened to include the *development* of students' ability through exposure, encouragement, and effort.

These profiles illustrate that there are students of color who are successfully negotiating the highest level of the educational process. Their stories, along with accounts from the faculty and administrators who believe in the potential of these students and programs, are captured in this publication. This report is distinguished by the fact that the story will be told largely through the voices of SROP participants, their mentors, and program administrators. It is intended to provide an additional dimension to a debate which has primarily rested on numerical and statistical foundations.

INTRODUCTION

An examination of demographic and economic data, a thorough review of research in the field, and some expert opinions suggest a shortage of well-educated professionals and academicians of color as the new millennium approaches. The percentage of faculty from these underrepresented groups has barely changed over the last twenty years, and currently comprises six percent of the faculty at institutions of higher education. To date, most of the research that has been done and much of the discussion in academic circles on the topic of students of color in graduate programs has centered on quantitative data. Gloomy projections based on the number, proportion, and yield of these students filters through the popular media, and adds to the general perception of failure and frustration of students of color in the American higher education system. The limited visibility of positive images and messages leads, by default, to the accentuation of negative role models and life options. News reports on any given day recount stories of frustrated young Black and Latino males, in particular, who make shortsighted or misinformed choices. The perception of these young adults is further shaped by their media-driven stereotypes as athletes, criminals, or in generally subservient roles. As they perceive themselves regarded as "disadvantaged," "at risk," "violent" or part of the "permanent underclass," soon enough their dreams dissolve into disappointment, fear, or rage. Many young adults have come to the unfortunate conclusion that education cannot provide them a way up or out.

This publication should increase the visibility of students of color who are succeeding in graduate programs. This positive message can add a hopeful alternative to the barrage of negative, often misleading images that undermine the confidence of young people while feeding fears that naturally surface when anyone faces the unknown. Too many young people, parents, teachers, and policy makers make decisions based on the fallacy that these students lack the basic capabilities to pursue careers in rigorous disciplines, especially science and engineering. Even within higher education circles, the debate often focuses on the 'deficit model' where attention has been riveted on both the real and perceived deficiencies of students of color, i.e. low test scores, disadvantaged socio-economic backgrounds, low motivation, etc.

Summer Research Opportunity Programs (SROP) in graduate schools across the nation encourage young students of color to pursue the Ph.D. This project profiles students, faculty, and administrators who are engaged in this successful program model. It will also provide insight into the impact which SROPs have had upon institutional policies, and practices, as well as upon student and faculty attitudes and behaviors.

The eight universities selected represent diverse graduate institutions. At each institution, two SROP alumni who are currently enrolled in graduate programs are profiled, along with a faculty member who has served as an advocate and mentor, and an administrator who manages the program. These profiles illustrate the reality that Black, Latino, and Native students exist who are successfully negotiating the educational process at its highest levels. Their stories,* along with accounts from the faculty and administrators, who believe in the potential of

their students, are spotlighted as evidence that relational, collective efforts can lead to success.

This project provides students, parents, teachers, and policy makers with the tangible evidence that they can make a difference when an individual student is made to believe that opportunities for educational success are both worthwhile and attainable. These case studies will clarify and underscore the success of the SROP model. Evidence suggests that all parties concerned—students, faculty mentors, administrators, institutions—have been empowered by the experience. Students increasingly gain self-confidence and a tangible understanding of the challenges and opportunities associated with education. Faculty gain the insight associated with taking a more proactive role in mentoring young scholars who might not otherwise have been identified or attracted to their programs. The institution ultimately benefits by assuming a leadership position in this critical twenty-first century mandate.

***These stories have been edited for consistency, style and format.**

SUMMER RESEARCH OPPORTUNITY PROGRAMS

The United States Department of Health and Human Services was among the first to acknowledge the problem of underrepresentation and to direct an effort to correct it by providing support for undergraduate science training programs. In 1972, the Minority Biomedical Research Support (MBRS) program provided research grants to faculty members at institutions with substantial populations of students from underrepresented groups. These grants allowed undergraduate students to be hired as employees on research grants. The Minority Access to Research Careers (MARC) and Honors Undergraduate Research Training (HURT) programs were started in 1977 in the National Institute of General Medical Sciences of the National Institutes of Health to support training activities at Historically Black Colleges and Universities (HBCUs) and other minority institutions. The research and training activities are supplemented by tuition, stipends, and a specially structured curriculum. The centerpiece of the MARC-HURT program is research in biomedical sciences. The summer research project component is usually conducted off-campus. Major research universities subsequently created formal SROPs and often worked in close cooperation with MARC directors at Historically Black Colleges and Universities and later with other minority institutions (MIs) including Hispanic Serving Institutions (HSIs) and Tribally Controlled Colleges (TCCs). One of the earliest programs, the Purdue-MARC Summer Research Program, established in 1979, has tracked the educational achievements of its trainees and can boast nine earned and twenty-two pending doctorates; thirty-two earned and nine pending master's degrees; one earned MD/Ph.D.; and a number of M.D. degrees.

These early efforts were followed by a mix of activities in the public and private sectors. Such examples include: the Ford Foundation's major Undergraduate Initiative, which includes the *Mentoring Through Research Projects* aimed at improving undergraduate education and recruiting the next generation of college professors; General Electric's aggressive approach to increase the supply of engineers from underrepresented groups through research internships; and the National Science Foundation's *Alliance for Minority Participation Program* which supports and encourages comprehensive approaches to increase the production of Ph.D. degrees in science, engineering, and mathematics, including strategies such as summer research, faculty directed projects, and mentorships.

Since 1986, university-based programs have been started at a number of graduate schools, launching a frontal attack on the multiple barriers facing these students. These efforts are broadly designed to attempt to equalize graduate educational opportunities for students of color by building bridges of communication and interaction between these students, on the one hand, and the university community on the other. Thus, a new, enriching variable was added to both sides of the equation--direct exposure via research opportunities in science laboratories and centers. Motivated students were identified and assigned to faculty mentors in research settings.

Summer Research Opportunity Programs generally have three primary objectives:

- to provide participants with research experience in an environment consisting of faculty, graduate students, and professional role models;
- to encourage participants to consider pursuing the Ph.D. degree; and
- to motivate participants to consider careers as college teachers.

Activities in these programs focus on the development of research and technical skills while providing information about graduate training and advice from faculty and similar role models. In addition to joining a research group, students attend workshops designed to increase their research capabilities and self confidence, to encourage them to enter graduate programs, and to prepare them to successfully pursue an advanced degree. We know that for African Americans, as an example, involvement in research as an undergraduate is a stronger predictor of later participation in and persistence toward the graduate degree than his or her grade point average or standardize test score.

Benefits of SROPs include :

- introducing students to the excitement, challenge and character of a discipline through the process of discovery;
- helping students with academic potential to gain confidence and overcome doubts about their abilities to succeed in high-performance environments;
- giving students information and inspiration to believe that attaining a graduate degree and a career in the academy are achievable goals;
- exposing faculty at host institutions to talented students from HBCU/MIs and other small liberal arts colleges and the SROPs; and
- sending a clear message from the top to the bottom of the institution that there is a commitment to help these students find their earned, productive place in university communities.

The primary element of a successful SROP is institutional commitment which can be evidenced on a number of dimensions. First and foremost, faculty participation as research mentors must be encouraged, recognized, and valued by the institution in tangible ways, ultimately in the review process for promotions and tenure. Long-term, preferably line-item, financial commitment is important so that the annual planning process is not constrained or limited by fiscal uncertainty. A solid financial core can also lend credibility to requests for supplemental funding from foundations and the corporate sector. Graduate departments must welcome people of color into the community of scholars and take advantage of every opportunity to provide information, encouragement and support.

In addition, both faculty mentors and students must understand their roles and responsibilities in this enterprise. Students are to be actively and intimately engaged in the faculty mentors' research agenda. This challenges both parties to commit the requisite time and attention. Finally, a system for data collection and evaluation must be put in place to gauge the impact of the program on the student and the institution, and to provide feedback for the process of continual improvement.

SELECTED PROGRAM PROFILES

PURDUE UNIVERSITY
West Lafayette, Indiana

Purdue MARC/AIM Program

Years in Existence: 14

Number of Students per Summer

1980:	6
1981:	9
1982:	18
1983:	26
1984:	12
1985:	17
1986:	37
1987:	37
1988:	38
1989:	29
1990:	32
1991:	44
1992:	46
1993:	51

Participating Departments: Agronomy, Animal Science, Audiology, Biochemistry, Biology, Chemistry, Communication, Computer Science, Engineering, English, Pharmacology, Physics, Political Science, Psychology, Sociology

RAMON E. SOTO

Hometown: Moca, Puerto Rico
Undergraduate Institution: Purdue University
Major: Spanish/Political Science
Year of Graduation: 1991
SROP: 1989
Research Assignment: Comparative Literature
Graduate Degree Objective: Ph.D.
Discipline: Political Science/Cultural Studies

I grew up in Moca, Puerto Rico. It's a very small town in a valley, a very Catholic town directed toward the community. Family is very important. It's basically a traditional atmosphere; minor agricultural products, including coffee and sugar cane, are the primary industry. I attended a Catholic high school that was strict, demanding and discipline-oriented. I went to Purdue because I had a connection; the person in charge of advising students at my high school had two sons studying at Purdue. When you go to another place, even though it could be an adventure, it is a little more comfortable to know someone who is already there. It was very helpful to me because back home I was not considered a minority and when I got to Purdue I became one. There were people at Purdue from home who helped absorb the shock and prepared me for the cultural differences. My parents are very far away, and although they are supportive, they probably don't understand what I'm studying or what I'm doing on a daily basis.

I'm studying political science. I basically study forms of government, democracy, and culture. The reason I'm pursuing this is because I think there's a great advantage to my being here—for Purdue to have me here—because I have a voice that they haven't heard before. I present things from a perspective they haven't seen. For me, the questions are, "How do minorities fit into this world? How do we fit into the political science department? How do we fit into society?" I think that political science will be an avenue for me to expose, address, and perhaps answer these questions. Providing a presence of difference is what strongly drives me. I am the only Puerto Rican in my program.

I initially came here with an interest in veterinary medicine. Coming from an agricultural community I always loved animals, but I soon realized that I liked healthy animals not sick animals. Then I took a course in political science with an excellent professor, and because of her, I started looking at political science as my future profession. She talked to me about participating in the summer research program. Until then I didn't

thinking and said, "You are important not only in the classroom but beyond." Thinking back, I probably would not have done what I have if it wasn't for her encouragement. I worked with her during the summer program. She put a lot of responsibility on me and afterwards I started taking graduate courses or dual-level studies. Although I was still an undergraduate, she allowed me to take these advanced courses with her, so basically, the summer program was like a spring board for my interest in graduate school.

I'd never done research like this in my life. At that time, I hadn't even thought about going to graduate school. So when I went into the summer program I was expecting something that I was not going to be able to handle. But as I got into it, I realized that I could handle it, and that I was actually doing very well. Doing research, reporting to the professor, analyzing data—it wasn't the monster they always presented it to be. It was hard work, but it was nothing that I couldn't handle. I think, basically, it just gave me knowledge, guts, and some confidence. I was very excited. I can't speak for everyone, but the experience showed me that I could do more, that I didn't have to stop with a bachelor's degree, that I was able to move on.

I like teaching a lot, but I think I will pursue both teaching and research. Basically, if I do my research, teaching will be a kind of therapy. I like to think I'll get a Ph.D. and be a professor some place. I just want to get my Ph.D. and then think about other avenues to help the community.

LIZA SIMENTAL

Hometown: El Paso, Texas
Undergraduate Institution: University of Texas at El Paso
Major: Psychology
Year of Graduation: 1990
SROP: 1990
Research Assignment: Psychology
Abstract Title: "Stress and Coping"
Graduate Degree Objective: Ph.D.
Discipline: Psychology

I grew up in El Paso, Texas as far west as you can go in Texas. There are a lot of different cultures within that area: Indian, Spanish and American. I attended a private, all-girls, Catholic high school. They tried to push us to the best of our abilities and encouraged us to go away to college, which is somewhat difficult to do within the Hispanic culture. Parents want their kids to stay in the area because our culture revolves around the family. Staying at home is definitely more acceptable and that's what I did as an undergraduate. I'm the first one in my family to pursue a Ph.D. I was the only child, so my parents had a difficult time, especially when I decided to go to graduate school. But after talking with them about why I wanted to go to Purdue, they were understanding and encouraging of my decision to go to a university 2,000 miles away.

During the first two years at the University of Texas at El Paso, I had a real difficult time. I was in the education department, but it was too easy and I was really bored with what I was doing. I spoke with the director of the Minority Access to Research Careers (MARC) program and told him about my plans to go on for a Ph.D. in education and he pretty much blasted that idea out of the water when he said, "If you really want to get ahead in the university setting, you should get a Ph.D. in the sciences." That was my junior year. I was in the process of completing the education program at an accelerated rate when I switched to the psychology program because I had an interest in counseling. I decided to enter the MARC program and my curriculum changed drastically because I was taking courses in biology, chemistry, and math. It was a lot more challenging. I had to really work hard to get through my classes. At the same time I was much happier. But I still had a lot of misconceptions about graduate school. I participated in two summer programs, the first one was at the University of California, San Francisco, the second one was here at Purdue where I worked with two different professors, one of whom is now my major advisor. At Purdue I worked through some of my fears. In the initial program I was just afraid of graduate school. I was really concerned about whether or not I would make it through graduate school. Coming from a small university, I really doubted my

own abilities. The nice part of the summer program was that I met a lot of other people with the same fears. We were insecure in terms of thinking we wouldn't be able to survive the program compared to students who came from larger, better known universities. Also, being considered a *minority* student was a shock. I came from a university where Hispanics were the majority, so I never really thought of myself as a minority. Suddenly, I was in an environment where the students, the faculty, and the residents in the area were predominantly caucasian and I had to deal with some of their prejudices. The graduate students of color worked with us and they prepared us to deal with the subtle racism that we might encounter, such as students who would make wise cracks saying, "The only reason you got in here was because of affirmative action, you wouldn't be here otherwise."

The summer program was a huge factor in my decision to go to Purdue. The most enriching experiences in the program were the social interactions with a variety of faculty and graduate students. They talked to you and that helped to alleviate some of the fears. My major advisor has been really supportive and he's got a good sense of humor. The program prepared me for graduate school in as many ways possible: working with a variety of professors, communicating with different personalities with different interests, which may not necessarily mesh with my own, understanding the politics of graduate school, and learning to adjust to new situations tactfully.

Part of why I want the Ph.D. is the power—being someone who's in a position to be heard and to make decisions. I now have a friend who is going into a Ph.D. program and she has decided, "If Lisa can do it, why can't I?" Right now I feel that I have been on the receiving end, in terms of being a student in the summer programs and also being a student in graduate school. At some point I hope that I, too, can encourage other students.

TUAJUANDA JORDAN-STARCK

Dr. Jordan-Starck with children Jordan and Patrice.

Hometown: Forrestville, Maryland
Undergraduate Institution: Fisk Univ.
Major: Chemistry
Year of Graduation: 1982
SROP: 1981
Research Assignment: Biochemistry
Graduate Degree: Ph.D. in Biochemistry, 1989
Current Status: Postdoctoral Fellow at Univ. of Cincinnati College of Medicine

I was born in Charlottesville, Virginia. My father was a welder and he actually got his GED after he got out of the army. I used to see how my mother and father struggled to make ends meet. My mother would always say, "You have to make sure you know enough to take care of yourself." That made a strong impression on me. That, and the fact that my mother's mother was my favorite grandmother. She only had a third grade education and was a maid. When I saw all of the stuff she had to put up with, it inspired me to do more. When I was about nine, we moved to Maryland because my father found a job that was stable. From the fifth grade through high school, I lived in Maryland, just outside of Washington, D.C.

I think my high school education was about average. I had a math teacher who inspired me to do something good, by being so negative. When my guidance counselor gave me an application for a pre-college program, I asked him to write me a letter of recommendation. He said, "Why are there always so many programs for *you people*... you're not so deserving." So I became determined to do better if for no other reason than to prove him wrong.

I never really liked science until I took an advanced biology class that really piqued my interest. My senior year, I took as many advanced classes as I could in science and math to try to prepare myself for something bigger. This didn't sit too well with my friends because they were taking easy classes or working half days. I'd always do my work first and my friends came second. When it came time to start applying to college, I applied to big, prestigious schools and got accepted to all that I applied to. But when I got accepted to Fisk, that was it! I knew all about W.E.B. Dubois, so I just had to go. At Fisk I switched from biology to chemistry. I loved chemistry: going into the lab, creating things, and actually thinking through something from beginning to end.

My junior year, the chairman of the biology department encouraged me to apply for the MARC program. Initially, I was intrigued by the stipend. During the interview the MARC steering committee asked me, "What do you want to do in life?" I didn't have a

clue. They said, "If you get in the MARC program you have to do research in the summer." It didn't seem like it was such a big thing to me so I started doing organic synthesis as my research and I absolutely loved it! My research went well and I won an award for what I accomplished, so they sent me to the Purdue MARC Summer Research Program.

At first I was really worried that I would not be successful. I never failed at anything in my life. That's when I decided that no matter how long I had to work in the lab, I was going to make sure I did things correctly. That started my very long days and weekends in the lab. My research was in biochemistry and that's when I decided to become a biochemist. When you come out of a successful program, you figure, "I can conquer all, there's nothing I can't do." When I got to Purdue for graduate school I was in for a rude awakening. No one told me your study habits were going to have to change. No one told me about the differences between being at a small Black university and a huge white institution. That first semester I must have failed almost everything! I experienced culture shock and was devastated because I'd let myself down, I'd let my family down, and I felt that the white people thought that I was stupid. I was *not* stupid. Luckily there was one other Black student (a Fisk alumnus) in the program, three or four years ahead of me. He really helped me because he knew that part of my problem was my study habits. Everyday when he left his lab he'd come downstairs to my lab, take me home, and sit there and make me study. Everyday his wife would feed me dinner and I'd study more and then they'd take me home. My grades improved and the next semester I did fine. Professor Rodwell was really patient with me that first year. I think that a lot of professors would have decided that I was not going to make it, and just put me out. He was very good and I appreciated that. Purdue was such an isolated place, with so few people of color, it was really difficult for me. I encountered quite a bit of prejudice on campus and in the city in general, but I was always able to maintain my head in these situations.

These kinds of programs are important on every level. That's why my husband and I, along with a group of friends, established the Woodburn Center for Cultural Studies as well as a summer enrichment program for kids, sixth through twelfth grades. We bought an old building and rehabilitated it in a predominantly Black neighborhood. The kids have really low self esteem, but if you can relate to something that they're interested in, they ultimately grow. We teach, in addition to math, science, and computer science, African history. When we show the kids that the basis for trigonometry and algebra was developed on the continent of Africa, they do a lot better. We have free programs to try to keep the kids off the street and to educate people about who we are as a people and what we can do.

At this point, I am seriously considering a career in industry as opposed to entering the academy. I have two kids and a husband with whom I would like to spend quality time. I have already written one grant and it didn't get funded so then I started thinking, "Can I deal with this the rest of my life?" You have to put so much energy into writing these proposals and if they don't get funded, you have to start all over again. I need to be in an environment where I can have the things at my disposal to do what I really want to do—great research.

VICTOR W. RODWELL

Professor of Biochemistry
Program Director & Faculty Mentor

Years of Academic Teaching: 34
Years of Involvement in SROP: 14

In 1980, I, along with two colleagues, Dwight Lewis and Luther Williams (now at the National Science Foundation), were on our way back to Purdue from a MARC meeting in Atlanta. While we were waiting in the Atlanta airport, we decided to start a summer program and invite minority students to campus to get some research experience. Luther Williams ran the program the first year and recruited six students. I have been running it since then with the assistance of Dwight Lewis. It has grown from six students per semester to our current level which is around 45-50 students. Until very recently, the program has been financed and supported entirely by Purdue. We take students from anywhere, including Purdue, and in any field. After more than a decade, the program tends to run itself. I think we are fairly tightly organized now and the vast majority of students have a good summer experience.

Part of the reason I am so committed to this enterprise has to do with my own experiences. I was born in England where my father finished high school during the first World War. He was a top student but didn't have the opportunity to go to a university because he wasn't the right class of person. I'm sure he would have done quite well at it. And so that gives me some sort of identification with people who haven't been given opportunities. I don't like that kind of society, and although this is not exactly the kind of society we're living in, it has its overtones. I have a tendency to identify with people who come from the wrong side of the tracks. Most of my graduate students, for that matter, don't come from privileged backgrounds by any means.

The summer research program is an opportunity for students to devote essentially all their energies to working in a graduate school environment. It is hands-on research. Our goal is for the student to get some positive reinforcement for a post-graduate education. Hopefully they go away not only with a positive impression of Purdue but of academics in general, and of research in particular. We'd like to help them make up their minds as to what they want to do with their lives. In addition, we have an enrichment program which includes a GRE preparation series, the Committee on Institutional Cooperation (CIC) conference, and evening speakers. At the end, each student gives an oral report and writes an abstract. It's a great opportunity for faculty and other people who work with

the students to get acquainted with the fact that there are many talented minority students out there who are very glad to work in a research environment for the summer. It's also a very good interpersonal experience for everyone. I've had some delightful interactions with people I wouldn't have had interactions with otherwise. It gives you a good feeling when people like what you do. It sure beats lecturing—I thoroughly enjoy it.

The program has had an impact on our institution as well. For example, we had a Minority Faculty Fellows Program, a program where we bring minority students on campus for three days to interest them in coming to graduate school, and another program funding over 100 master's degree minority fellowships as an entree into our Ph.D. programs. We look very hard at whether a person has had a good research experience and find that it is a better predictor of how they'll do in our graduate program than their GRE scores or their grade averages. The research associated with attaining a master's degree can provide this kind of feedback. There are limits, of course—somebody making C's in organic chemistry may have problems. But in my opinion, drive is much more important than academic achievement or brilliance in achieving a Ph.D. You have to be persistent. If you run into difficulties you have to surmount them, some people do and some people don't, brains or not.

I expect summer interns to come in early in the morning, work all day, interact with my graduate students, ask questions, generally have a little success with what they're doing, and hopefully leave with the positive impression that biochemistry can be fun. If we have social events or a softball game, we invite the interns along and try to involve them as much as possible. I basically expect that they try their best and I'm rarely disappointed.

UNIVERSITY OF CALIFORNIA AT LOS ANGELES
Los Angeles, California

Summer Research Program for Underrepresented Undergraduate Students

Years in Existence: 13

Number of Students per Summer

1981:	6
1982:	7
1983:	8
1984	10
1985:	10
1986:	15
1987:	16
1988:	26
1989:	42
1990:	39
1991:	67
1992:	35
1993:	47

Participating Departments: Art History, Comparative Literature; English, Folklore & Mythology, Germanic Languages, Philosophy, Spanish & Portuguese, Biology, Microbiology & Molecular Genetics, Molecular Biology, Physiological Science, Psychology, Astronomy, Atmospheric Sciences, Chemistry & Biochemistry, Earth & Space Sciences, Mathematics, Physics, Anthropology, Geography, History, Latin American Studies, Political Science, Sociology, Architecture, Urban Planning, Education, Engineering, School of the Arts, Dance, Ethnomusicology & Systematic Musicology; Film & Television, Theater, Anatomy & Cell Biology, Biological Chemistry, Nursing, Public Health

STACEY SINCLAIR

Hometown: Los Angeles, California
Undergraduate Institution: Stanford University
Major: Psychology/Economics
Year of Graduation: 1992
SROP: 1991
Research Assignment: Psychology
Graduate Degree Objective: Ph.D.
Discipline: Social Psychology

I was born in the Bronx, but we moved to California when I was about nine, so, I grew up in the Valley. The high school in our neighborhood was predominantly Anglo and Asian American, but we had a lot of African Americans and Latinos bussed to our school. It was a very interesting experience because I was one of the few black people who lived in the neighborhood. I was also one of the few African Americans on the honors track and I never really had contact with other African Americans on campus—that caused real tension. It was hard because when we studied black literature the burden of proof would be on me... "So, how do you feel about (this or that) Stacey?" Our teachers were very good to honor students, but they kind of neglected everyone else. I was always very aware that I was one of the few to learn something.

I have always loved psychology. I took three courses in high school. I tried to fight liking psychology, though. I thought to myself, "Look, I don't want to be poor. What does a psychologist do? I want to make money." So when I went to Stanford I majored in psychology and economics with the intention of going to business school. I finally realized that business school wasn't for me when I went to the summer research program. I loved working in the lab. I loved to design experiments, so I had a great time. For the second part of the summer I went to my office job and I made a lot more money, but it was so boring. I was a big cog in the wheel and I hated that. One day I was pushing around some papers and I realized I wasn't accomplishing anything, so I came to the conclusion that I wanted to do research. I think it's the concept of creating. When I am done with my research I have created something. I change the world in my own way. I like that.

Although I had been admitted to other graduate schools, I came to UCLA because I was very comfortable here. Prior to the summer program, I heard that UCLA had a reputation for being cold, so I was expecting to go and work for the summer and that would be it—but it turned out to be a lot of fun. Just being in a large group of people of color who were intelligent and who wanted to go somewhere was great. We had long talks and I realized there were a lot of people out there just like me and that was really a good part of it. My summer mentor is my advisor now. He was wonderful, and still is. He was really pro-graduate school and would do all of these things to socialize me. I was still think-

ing about going to business school. But somewhere at the back of my mind they must have moved me because by the end of the program it worked. It was truly a formidable experience. It seems that the differences between undergraduate and graduate school are kept secret. Doing the research program was very helpful in finding out what those differences are and finding out if it is what you want. When I returned to Stanford I taught a peer counseling class and that really solidified things for me. I very much want to teach. I'm also interested in policy making. I'm very interested in local analysis and social analysis toward actual intervention.

My mother loves the idea of my getting a Ph.D. and my father says that I've made good decisions in the past. My aunt is the only other person in the family who has a Ph.D. She sent me a whole book on how Ph.D.'s are poor and teachers disrespected. My peers, surprisingly, are very impressed. I never thought anyone would react that way, because I always thought graduate students were kind of 'geeky' myself, but people are really impressed. Everyone is respectful of the fact that I have to study.

I keep a lot of contact in the real world so I don't get swallowed up. As a person of color, gaining a Ph.D. is really rough. I find myself doing a lot of things that add to my responsibility in the Black community or the Associated Graduate Students of African Descent (AGSAD). I'm on the steering committee and we're trying desperately to unify the Black graduate community at UCLA. I have a hidden agenda of political unity. Sometimes, a lot of days go by before I see another Black person or another ethnic minority, period. So with AGSAD we can draw people from different departments, we can look at each other, know we're there, and make friends. I also volunteer a lot outside of school, more so than I think a person in a majority situation does. I have to juggle all these things as well as school and it's hard. But once it's over, I will have what I want.

MARK PIZARRO

Hometown: San Francisco, California
Undergraduate Institution: Stanford University
Major: Urban Studies
Year of Graduation: 1989
SROP: 1988
Research Assignment: Education
Graduate Degree Objective: Ph.D.
Discipline: Education

I was born in San Francisco but I grew up in Daly City, which is right next to San Francisco. I attended a public school where minorities were the majority. Although I did well in school, when I got to Stanford I realized that I didn't have the educational preparation that others had. I was prepared enough to survive, but I wasn't prepared enough to take advantage of the situation. I felt really overwhelmed—I think that probably happens to a lot of us. Students who were from upper middle class white backgrounds, or who had parents who attended places like Stanford, knew what to expect and they fit in. I just kind of floated around looking for something I thought I could do. I really was wondering whether or not I would survive, for pretty much my first and second years. I shopped around different majors until I found something I thought would be interesting to me. I decided to major in urban studies. Part of the reason I liked it was because I was able to design my own major within the program. I worked on education in foreign issues and devised something around that relating to minority populations. It was hard, and pretty much a trial-and-error experience, but that's how I got started.

I am the oldest of two. My father grew up in the Valley as a migrant farm worker. When we were kids he went back to school to get his college degree. So I think that was important for me as a kid growing up. I saw how he fought really hard. He worked two jobs and went to night school, but he didn't have the experience that I could tap into to deal with issues at Stanford. While I had advice from my friends and support from my parents, they could not always provide me with some of the things I needed and I didn't know where to get help either.

My dissertation is on the consciousness and resistance of Chicano students in high school. I'm trying to get a feeling for what leads to different levels of racial consciousness and how that might be linked to behavior in the classroom as well as student outcomes.

During my third year at Stanford, I was encouraged by my professor to consider the possibility of a career in research. A Chicano administrator who was working in graduate affairs told me about the summer research program. I needed the money and thought that LA would be cool for a summer, so that's how I got to the summer program at UCLA. I

chose a topic of interest to me—bilingual education—and enjoyed being tied into research with a professor. I think that the summer research experience works if the conditions are right between the student and the professor. But when I left the program, I still wasn't sure if I wanted to pursue a graduate degree.

I went back to Stanford and became involved in the Chicanos Fellows Program which was primarily for graduate students. I worked with two professors and two graduate students on educational empowerment programs for Chicanos and really got into the work. I did my senior thesis on the topic. I now realize there were a lot of things that got me to this point. I would not have gotten here on my own.

There are certain students who really get integrated into the program and there are others who fall through the cracks. I felt like I really fell through the cracks. I wasn't really sure what I was doing, I wasn't really sure where I was going, and there was no one that was involved in helping me until I got involved with a couple of professors who said, "Hey, you can really do this... this is something that you should pursue." I think this is a big problem because there are not enough people saying, "Let's look at this population of Chicano students or African American students. What is unique about them? What might they need? What might be helpful to them getting through?" The fact of the matter is that they are not latching onto these students and that's a serious situation. The weird thing is that it's so subtle, many people ignore it.

I'm working pretty hard to get things done because I've always had to work hard. I'm not doing this because I want a Ph.D. The only reason I'm doing this is because I'm committed and determined to change the educational system for the benefit of our children and my community.

GEORGE J. SANCHEZ

Associate Professor of History
Faculty Mentor

Years of Academic Teaching: 5
Years of Involvement in SROP: 3

The top priority of the summer research program is to get more students of color to think of going on to graduate school. I think it has some other purposes, too. One of its purposes is to ensure that students who move on to graduate school have some sense of what they are getting themselves into. Graduate students without experience in real primary research with a faculty member don't really know and spend the first year in graduate school trying to figure that out. Students who have some kind of research experience usually hit the program running. Also, for some students, it is an opportunity to make the decision not to go on to graduate school, which is important as well. I think being able to make an informed decision is really important for students.

On the faculty side, clearly, at least here at UCLA, part of the program's purpose is to try to get faculty to think creatively about pipeline issues. In my department, as an example, a lot of faculty have sympathetic hearts, but they don't necessarily know what to do. This is a very concrete program that allows them to think about giving undergraduate students an opportunity. Faculty who get involved in the program see this as a commitment that often carries into their work on the graduate admissions committee, financial aid committee, and eventually onto academic committees, dissertation committees, and so forth.

My choice to participate was based on a pretty straightforward reason. When I went to college and to graduate school I knew that there were significant people helping me along at every step. I was planning to be a lawyer. I only knew two professions, law and medicine and I didn't like science. To be very honest, I would not have thought about becoming a professor if it wasn't for individual faculty members who took me aside and said, "Look, you should think about it." Being a beneficiary of that kind of attention and the kind of financial aid programs that helped minority students, I have a basic commitment to paying back and to keeping the pipeline as open as possible.

As an undergraduate I, too, was involved in primary research. I won a fellowship to do research during the summer that would prepare me for my senior thesis. The other thing that I did at Harvard was to work one summer as a research assistant on a sociology project that was organized by a faculty member in sociology working in race relations. Both of those experiences were pretty important to my development. It is very important that young people become seriously engaged in issues from an intellectual perspective.

I, and the other faculty who are committed to this venture, know that there are students out there who have the potential for graduate school. Often these students fall through the cracks. These programs allow us to think about the sorts of techniques we could use to interest more students. I know that it has carried over into my undergraduate teaching; my experiences this summer prompted me to think about how to incorporate more research into normal undergraduate courses. I now encourage students to think about issues in different ways and then get them active in their education. It has improved my teaching.

I know that money is the big issue. Universities, like UCLA, under severe budget crunches, are going to have to think about what works and what doesn't work. These programs definitely work in terms of addressing one of the most difficult issues in the last twenty years in higher education: the academic pipeline for students of color. If programs like this are important and have made a difference, which I think they have, they should be funded and other things should be cut.

Faculty at the hiring level always bemoan the fact that there aren't enough qualified candidates of color. I often ask faculty, "Have you ever had a first-rate student of color in your undergraduate course?" They usually say yes, so I continue. "Did you take him or her aside and try to get him into a program or get him into graduate school? Did you encourage them or nurture them so that they might go on to be faculty members?" Anybody who has been on the faculty for fifteen or twenty years could have mentored a number of promising undergraduates, if they simply engaged in the effort. I'll give you a concrete example. To my knowledge, there are currently only ten Mexican American women in the country with Ph.D.'s in history, *only ten*. That means that any undergraduate teacher with bright Latina or Mexican American women in their classes, who simply take the step to recruit those students to summer research programs and graduate programs, could literally double or triple the number of Mexican American women holding the Ph.D. in history. If they simply make the effort. I don't think faculty realize the profound effect that they can have on the entire discipline of history. That's really what we're talking about—the future of this profession. This is an incredibly crucial area for faculty to influence and affect.

D. MICHAEL PAVEL

Assistant Professor of Education

Years of Academic Teaching: 2

I study how college affects students, how institutions adapt to changing student diversity, and how policies affect both of those processes. Most of my research focuses on American Indians and Hispanics. I have tried to establish a research agenda that first asks, "Do mainstream models of higher education apply to minority students in general, and Hispanic or American Indian or Alaskan Native students in particular?" I've tried to focus on how graduate students employ various strategies to overcome barriers to degree achievement.

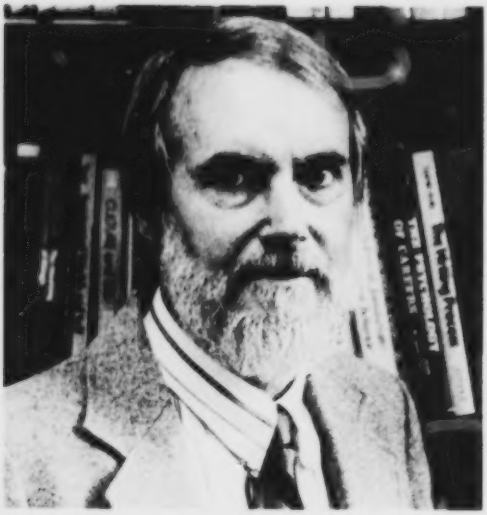
I believe that prior intention is one of the most important measurements of success in actually applying for, enrolling in, and completing a graduate program. When you are working with undergraduates, you've got to give them the idea. The seed can be planted by a number of people, most importantly the family, and secondly, by institutional representatives. At the undergraduate level, it has to be the advisor, the faculty within the department who plant the seed. Earlier on people need to say, "I don't know what you plan to do in terms of your career aspirations, but you should strongly consider graduate school." The next step is to help the student enhance their skills and abilities so they can see graduate school in their future. Faculty should be working with them on skills that are going to be important in graduate school and have the opportunity to refine those skills. These are critical needs that can be met by summer research programs, which seem, in general, to forge the intentions, aspirations and commitments of the participants.

For American Indians and Alaskan Natives there always seems to be a situation of finances that's quite similar to Hispanics and African Americans. However, the committed student seems to overcome the rigors of pursuing a graduate degree and they somehow find the money to succeed. Differences start to occur in terms of the subject that they want to pursue and the kind of guidance or expertise that they can get to help pursue that subject matter. Typically, American Indians and Alaskan Natives cannot find a faculty person or field that allows them to pursue issues concerning American Indians and Alaskan Natives. We see a tremendous difference between those underrepresented minority groups and the majority students typically who do not have to go through the political, ideological, and intellectual hassles of finding faculty to support or approve their topic. More poignant for American Indian and Alaskan Native students, there's a great pull for them to go back to the community that's a little bit different from what we experience with the Hispanic and African Americans. Even though African Americans

are deeply rooted in the community, they seem to possess the ability to travel or relocate, or the willingness to work in areas that they haven't grown up in. American Indians and Alaskan Natives have rituals and ceremonies; there are periods of time throughout the year that the American Indian has to go back to the reservation to participate in cultural activities. That's not to say that the Hispanics and Blacks don't have cultural activities, but typically those can be found within a community where they go to school.

I can personalize the pull to go back to the community. My education was interrupted because I had to participate in rituals and ceremonies or cultural activities. I am a member of the Skokomish tribe of the Pacific Northwest. It was a very difficult undertaking while still participating in the mainstream society. Yet, my culture taught me to persevere. It gave me an identity. I knew that for me to be familiar with my own culture was more rigorous and more difficult than even getting my Ph.D., and it isn't even near to completion. I seek to be an Elder in my tribe and that will require years of training in my history, my language, and my culture. The education I've gotten in the mainstream society represents an insignificant amount of my overall education.

The formula for success clearly involves resource allocation. You can't recruit American Indian people without outreach, without an established presence or program. They must know that you will take care of them, be concerned about their social and academic integration, and assure them that their culture will be respected. You bring them in, you talk to them, you plant the seed, and then you help them through the process. I think the efforts that you make to dispel myth or to help prepare them for the realities of the situation, regardless of how grim or how glowing they may seem, is a justice to the community served. Students should be told the truth; it's a rough and tumble world out there and if you don't mind getting your knees skinned or getting a few bumps and bruises you'll come out of it just fine. You can't guarantee them safety, you may not guarantee their happiness, but as long as you're there and you're willing to be part of their lives you'll help them through the hard times.



JAMES TURNER

Assistant Dean of the Graduate Division

Years of Employment at University: **22**
Years of Involvement in SROP Management: **3**

Participation in the program peaked a couple years ago. I think we had 65 students, which probably is a little bit too many to manage, but usually for the past several years we have had between 45 and 50 students. Most of them had been in the humanities and social sciences. We've also been somewhere between 385-400 applicants for these few positions. Historically, our sample is representative of the larger population that applies and those are humanities and social science students. One of the downsides is that many of them don't go on to Ph.D. programs; thirty to forty percent go into law and medicine. We are in the business of producing faculty; we make no bones about it.

We're also trying to build a mechanism whereby faculty and departments are heavily involved in the process. The quality of the faculty/student relationship must be the centerpiece of the program. About two years ago I went around and talked with a representative from every department on campus as to what they were doing in terms of recruitment of underrepresented students. A surprising number said they never even heard of the summer research program despite the fact that every faculty member in every office on campus gets mailed this literature. We've got to do a better job in making sure they know and get them involved in the selection process. Indeed, many departments throughout the campus are beginning to see this program as a major way in which they can enhance their involvement. What we're finding this year is that a number of science departments writing grants to support the students are very successful. If we can get them tied into recruiting and offering support packages to some of these students, it would make the pipeline work better. Bringing in students that the faculty member has a chance to work with for eight weeks allows them the opportunity to know whether they want them and dispels a lot of fears and misperceptions they may have about the performance of these students. Some of the faculty have really had their eyes opened. I think some of the mass prejudices about the quality of minority students disappears quickly once you get a real live person. Some of the students we had last summer were outstanding, top-notch students. Faculty members saw how hard-working and how bright they were right away.

Once you get a critical mass in any department, the students become a major recruiting force. That's what happened in the humanities and social sciences. For the last two or

three years probably 30-40% of the students admitted were minority students in English and History. The other thing that happened, of course, was once you get those students, you start getting the faculty—they demand it. I have asked departments if it might help if they had some minority faculty. First they said, "Not really. Why would that make any difference in science? Science is science." Well, in chemistry ten years ago there were no women and there were only about 15% undergraduate women. Now there are seven women in the field of chemistry and over 50% undergraduate women. You've got to educate people that this is important.

The essence of the summer research program is to place undergraduate students with faculty members who will give them special attention and encouragement. Based on the students' surveys I would say that, overwhelmingly, it's an extremely positive experience. Surprisingly, the faculty are sometimes more positive than the students. My sense of it is that everybody who participates thinks it's a really good thing. I think that if we would want to cut back in terms of the resources available for the recruitment of the students, the summer research program would be one of the last items. There are departments on this campus that have never graduated a single underrepresented student. Yet, they claim that they are highly motivated to do everything they can. I think we can help them through the summer research program. The summer program is concrete. It's something we can really do to target people and make sure that they keep moving up the ladder.

STANFORD UNIVERSITY
Palo Alto, California

Minority Summer Research Exchange Program

Years in Existence: 9

Number of Students per Summer

1985: 6
1986: 10
1987: 10
1988: 9
1989: 8
1990: 8
1991: 9
1992: 10
1993: 10

Participating Departments: Basic Science, Computer Science, Economics, Engineering, Humanities, The Martin Luther King Papers Project, Physical Science

JOHN H. DAVIS, JR.

Hometown: Seat Pleasant, Maryland
Undergraduate Institution: Cornell University
Major: Independent Major - Analyzing The Evolution of Racism in the United States
Year of Graduation: 1993
SROP: 1990
Graduate Degree Objective: Ph.D.
Graduate Program Discipline: Anthropology

I grew up in Seat Pleasant, Maryland, although my first eight years were spent in North Carolina. I was encouraged by my parents to work. While in high school, I internalized their values. I tried to do the best I could; I guess starting in middle school that meant straight A's. In high school I spent most of my time, I guess, trying to keep up at that level. I also had some fun in addition to that, but for the most part it was study, study, study.

I became interested in anthropology my sophomore year at Cornell. I was nominated and accepted by the Mellon Undergraduate Fellowship Program and, given my varied interests, I was matched with an anthropologist. I designed an independent major, so I didn't have to be true to any one discipline. I liked that. However, I first considered a career in research the summer of 1990, when I was at Stanford in the summer program. Before then, I planned to be a pre-med major; destined for medicine, fame, first doctor in the family. I could do the work but I wasn't as excited about it.

The thought of a Ph.D. first entered my mind when I met Professor Greenwood as part of the Mellon program; he encouraged minorities to go into teaching. Once I got into Stanford and started doing research and working with professors, I began to think ... "This is really cool!" I had three professors willing to help me expand my research, and I was totally floored by the idea that my work was important enough that they would give of their time and energy. As I got a lot of positive feedback and began to think seriously about it, I gradually became more comfortable with the idea of becoming a professor. I felt pretty good after that summer. I think printing up my final paper was the defining moment. Normally writing is a painful process, but I was able to sit down and tie together everything that I had been doing quite easily. I was so productive in just eight weeks, I thought, imagine what I can do in a lifetime.

For me, it was exciting to be with students from other colleges who were also thinking about going into Ph.D. programs, because you sort of get the feeling that people just know off the bat that they want to get the Ph.D. and that's not true. You meet other capable students and you see them waver, and you think, "Why are we wavering? Is it that we don't have enough confidence?" By the end of the summer, people were convinced

they could do it. Also, friendships were formed among students who may have had slightly different political orientations, or who were from different parts of the country. They often provided a good argument every now and again, exposing weaknesses in your logic, in your argument, and forced you to re-think your views. I think that was important, too, because I was more trusting of them, and I didn't take it personally. It really gave me a chance to be critical and to be constructively criticized by someone else.

I think a critical element of the program is the faculty/student match. It has a lot to do with the fact that people are taking you seriously, giving you the benefit of the doubt in most situations, but nonetheless treating you with respect. The fact that this is a serious effort on your part is recognized. Being treated as a colleague does a lot for one's ego and confidence.

I am pursuing the Ph.D. because I want to become a professor. Also, the idea that the Ph.D. is the highest degree provides me with tremendous incentive. I plan to study the Japanese education system, examine some of their issues, and maybe draw some parallels between what's happening there and what's going on here in the States. I'm also interested in the education of minorities in Japan. Of course they do a lot right, but they've got certain problems, too. I'm currently completing the FALCON (Full Year Asian Language Concentration) Program which concludes with an extended visit to Japan this summer. In the same way that my summer research was very much directed toward looking at issues here in the U.S., my graduate work eventually is going to come back to that. I'm just using foreign soil to train myself. Once I've mastered the craft, I'll try to become the artist.

RUBEN DIAZ

Hometown: Houston, Texas
Undergraduate Institution: Princeton University
Major: Aerospace Engineering
Year of Graduation: 1988
SROP: 1986
Research Assignment: Robotics
Graduate Degree Objective: Ph.D.
Discipline: Mechanical Engineering

I grew up in Houston, Texas. I attended a special engineering magnet program, math and science, which bussed everyone to school. It was actually a predominantly black school, a school within a school type thing; it was one of the better schools in Houston. It was a given that most students who wanted to be engineers ended up going to the University of Texas or the University of Houston. Only a few went out of state.

I went to school for three summers in Massachusetts at Phillips Academy in Andover and I spent a year there after I graduated from high school in Houston. The reason I decided on a post-graduate experience was because I got accepted to Princeton. I had certain fears about Princeton but I wasn't even close; it was even worse than I thought it would be. Because I attended a predominantly Black school and Princeton was just the opposite, I felt that I needed to get into that environment and see what the social thing was all about. I tried it and somehow it sort of back-fired: more socially than academically; to me it's a place where if you really study and struggle, it has to be done away from people. It wasn't necessarily the kind of atmosphere I was used to. It's the general feeling you get on campus and it's very homogeneous. It seems like everyone is wealthy and it's a very social type school in that sense. It's very small and everyone seems to know each other.

Also, it was tough to be in engineering at Princeton because it was sort of looked down upon. A lot of students at Princeton, who were Black or Latino in engineering, would tell people they were in math or another related field. I think part of it was the feeling that if they were not white and wealthy, and then add to that the engineering field, they were nobody.

I came across the summer research program while looking for summer work. Although I didn't feel that I was a research-type person, I figured I would find out and get paid in the process. I also thought it would be nice to see what California was about. I really enjoyed it at Stanford. I found out that engineering was high up on the scale, and that people do consider it something worth doing.

The greatest challenge for me doing the summer research was being left in the dark. Although I was working with a graduate student, I was given certain things to do and not

told exactly what to do or how to do it. Many times I was confused as to *why* I was doing something; there didn't seem to be much reward. I guess it would have helped if there was a little more guidance. The following summer I decided to stay at Princeton and do some more research. Participating in the program was critical to my decision to pursue a Ph.D. at Stanford. If you are even faintly thinking about going into research or getting the Ph.D., you've got to participate in a program, just to get a feel for how it is. Probably the biggest challenge for me in academics is that it can be a very solitary life. Also, it seems that I'm constantly trying to prove myself and that's not always fun. It's tough.

My father dropped out of school in the 9th or 10th grade. My mom completed high school and then went to vocational school, but that was it. They were really pleased that I finished high school and wanted me to stay home and go to the University of Houston. Instead, I went off to Princeton and now Stanford. My parents really didn't want me to do this, but because it's something I want, they're supportive. Actually, no one individual was influential in my decision to pursue the Ph.D. A lot of it was a feeling that I can be a good teacher and that the people I most admired in school are also pursuing the Ph.D.

FRANK A. WOLAK

Associate Professor of Economics
Faculty Mentor

Years of Academic Teaching: 7
Years of Involvement in SROP: 3

I chose to participate in the summer research program because this is the type of minority program that I believe in, and if you believe in something then you should devote the time to do it. I think that if you can solve a lot of problems with the under representation of minorities in academic institutions with these programs, it's better than admitting more people and then letting them fall by the wayside. The challenge is to convince the students that intellectual stimulation and intellectual curiosity are really a lot of fun and that they will sustain you for a very long time. That's what has made the program successful. Some of the students really caught fire and found that it was fun, or got into the graduate student lifestyle and found it enjoyable.

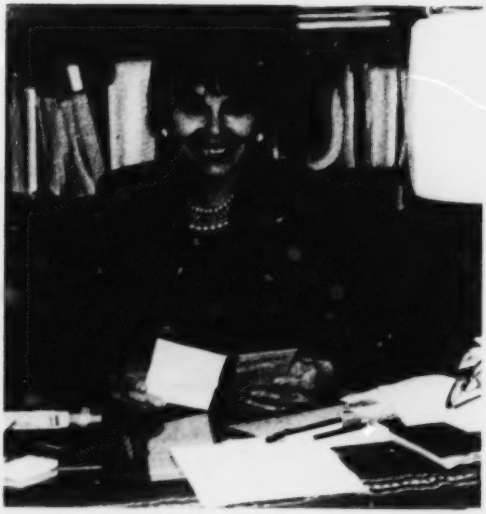
The major advantage is the faculty/student interaction. The disadvantage is that you'd like more students, so you can take advantage of the peer pressure to make it work. For example, the American Economic Association (AEA) has a summer minority student program and Stanford has been running it for the past two years. I'm participating in that this year. We call it "Economics boot camp." The students come in and we work their butts off. We essentially try to bring them up to speed in the math, statistics, and econometrics with the goal of getting them to work on an independent research project in a group. It's been really remarkable the amount of students we've got to go to graduate school who wouldn't have been admitted had we not recommended them.

I like the AEA program because it teaches another fact about graduate school; the fact that you learn a lot from your peers. I think that students are really cheating themselves when they try to go at it alone. They miss the opportunity to try their ideas out on other people. A lot of what being a scholar is about is being able to make a convincing case for what you're doing. A lot of that comes from interacting with your peers, because if you can convince them, then maybe you can convince the professors. I think there is an advantage to having a group of students doing similar types of things.

I challenge my summer students to take an argument, dissect it, and try to figure it out. Once you get them addicted to thinking and trying to figure things out, they're relentless. They have a lot of energy. They'll question you and that's what makes it a lot of fun. I think that as a teacher you can get stuck in a rut. Having them and all of their energy helps to sustain your excitement.

It's been an educational experience for me as well. I've learned a lot from the students

in terms of where they're at, what they're thinking, why, and what they want. I get a broader world view. For all of the rhetoric surrounding multiculturalism and all the things associated with it, I think programs like these increase awareness of the issues among students and faculty. People are now convinced of the usefulness of these kinds of programs as a more palatable way to achieve the goals. It's not at the point yet where we've seen these people in the academic job market, but we will in a few years, and we'll be looking at them.



GENEVA LOPEZ

Assistant Registrar

Years of Employment at the University: 4
Years of Involvement in SROP Management: 4

This program is in its ninth year and in an unprecedented third cycle of funding from the Ford and Mellon Foundations, so we feel very proud that it's been successful. One of the very unique aspects of this program is the exchange component; the opportunity for students to be on a different campus, experience a different campus life, and get different perspectives. There are definitely different perspectives between the west and east coasts just as there are different intellectual perspectives and lifestyles between the two coasts. The students have remarked about the experience of working with faculty who have other approaches or different ideas. Many of them are very knowledgeable about different programs and a lot of them know just exactly where they feel they would benefit the most. Students are becoming much more sophisticated intellectually about areas of study, about who's doing research, and about where those people are. I am seeing more applications, for example, where students are making placement suggestions and being very specific about their research interests within the discipline. It is challenging for us as a consortium to place these students. They do their homework and the applications that we've received here are very competitive. I am very, very impressed with the undergraduate student body here at Stanford University.

Every year I put together a committee that's made up of administrative staff, myself, graduate students, and faculty. I have them participate in the selection, either in the preliminary application review and the ranking of students, or in the final selection and interview process. One thing that's very important is that students expressly state an interest in going on, particularly to the Ph.D., because that is the goal of the program, and we feel that those students benefit even more so from the program.

To recruit students we put advertisements in the university newspaper, send out mass mailings, and put notices in the ethnic center newsletter. I also send a special announcement soliciting the help of my colleagues who are directors of the ethnic centers. The undergraduate advising center also helps publicize the program, so that helps to get the word out. This year we had more Mexican American students than African American students. Although the American Indian is always least represented, we are pleased that one of the students, who is coming this summer, is American Indian.

I usually send out a notice at the beginning of the year with a brief description of the summer program and its objectives. Sometimes I access our database portfolio of faculty

who have expressed interest in working with students in the summer and they will give a profile of their research interest, what they're currently working on, and whether or not they may even have a slot available. At the beginning of the program I have a faculty orientation. *I've been fortunate in getting, not only enthusiastic assistant professors,* but also senior faculty members. That has been helpful not just to the student, but also to the younger faculty or the faculty new to the program, as far as how to work with students. Maybe a fourth to a third of the faculty involved are minorities. Minority faculty members generally are very over-extended and they're not always available in the summer.

Overall, students think that the quality of the relationship with the faculty member is key. It's also very good exposure for faculty that may not have worked closely with minority students before. Faculty commitment is very important because it really makes the program.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Cambridge, Massachusetts

MIT Summer Research Program

Years in Existence: 8

Number of Students per Summer

1986:	8
1987:	12
1988:	16
1989:	19
1990:	19
1991:	17
1992:	30
1993:	28

Participating Departments: Applied Biological Sciences, Biology, Biomedical Engineering, Brain and Cognitive Sciences, Chemistry, Chemical Engineering, Civil Engineering, Earth, Atmospheric and Planetary Sciences, Electrical Engineering, Mathematics, Mechanical Engineering, Nuclear Engineering, Ocean Engineering, Physics, Toxicology

MICHELLE WILSON

Hometown: Grand Cayman, Cayman Islands
Undergraduate Institution: Howard University
Major: Mathematics
Year of Graduation: 1992
SROP: 1991, 1992
Research Assignment: Mathematics
Graduate Degree Objective: Ph.D.
Discipline: Mathematics

When I finished high school in the West Indies, I applied to five Canadian schools, no American schools. I got into all five and realized that there was no way I could afford it. So I worked for a year and deferred all my acceptances. During the course of that year I had a friend who graduated from Howard who encouraged me to apply.

Howard was good to me in many ways. It was a comfort zone. You go in and everybody is of your color and similar in background. In general, I think Howard tries to develop the whole person as opposed to just your academics. They try very much to nurture you and make sure that they give you what they think is best for your career. I got into math sort of perchance. I went to Howard intending to study engineering, but I liked math much better. I knew I wanted to do something in the sciences, but I wasn't sure what I wanted to do.

I went into the summer research program because I wanted an academic research experience. I basically just wanted to make sure that I could survive. My fears, I think, were based on the fact that MIT had such a big reputation. I just wanted to make the best of the experience and live up to everybody's standards and expectations. I was excited, that I know.

The program gave me a very good opportunity to figure out whether or not research was for me. It provided answers to questions that I had always had and wanted to know: "What would research be like? What should I expect?" It gave me the staying power to say, "I can make it through this." It also gave me a feeling for what to expect in graduate school. My research project was an investigation of stable and generic properties of differentiable maps. I found it quite exciting because I was learning new things and I realized that my background was not bad. I could move on and learn things on my own without being explicitly lectured to or taught those particular things. The greatest challenge was realizing that I could actually get through a book on my own and learn new material. Also, I had never been questioned while presenting my work before; I had to make sure that I knew *why* the next step was correct. I can still remember the first time I made a presentation to my mentor—it was nerve racking.

My mentor was really interested in what I did. He made pursuing a doctorate the expe-

rience of a lifetime. He cemented in my mind that academics is something that you shouldn't take for granted, you should work at it and if it doesn't work out, you just work harder. I got to meet people whose names I had just seen as editors and authors in text books. It was a mind-boggling experience. The program really provided me with motivation in my senior year. It opened my mind to things that I wasn't aware of and probably would not have been aware of had I not been in the program. The advice I got about graduate school was the best I could have gotten at that stage.

I am pursuing the Ph.D. because I'm a student at heart. It's also something I want, badly. I think it will afford me the flexibility to do whatever I want. I am really fascinated by the fact that it will allow me independence. But it's a very hard road and it is important to have support. I'm quite fortunate because my summer research mentor still sits down with me to talk, in general, about what is going on—especially on those days when you want to scream, or just throw in the towel. My mom is excited, but she is not quite sure if I know what I'm doing. My brothers are proud, I think, but look at me and shake their heads. Everybody fears math so they think—you do a Master's fine but a Ph.D. is pushing the insanity line a bit. The main question they ask is, "What are you going to do with the degree, teach?" I think it's because there are so many misconceptions about being in math and science. But you realize very early that you're the one who has to work at it. You're the one who has to get up even on days when you don't feel like it. I tuned my mind to thinking...I'm coming in, I'm working for me, I'm going to try and do my best.

I'm the only person of my color in the department—student or faculty—so there's one of me in every class. Last semester I had a class where I was the only woman, because there are not many women in the department either. Minority women have to assert the fact that we can do it, too. We have to get involved. We have to become the movers and shakers of tomorrow for our culture and for our community.

DON BRUNSON

Hometown: Baltimore, Maryland
Undergraduate Institution: Morgan State University
Major: Chemistry
Year of Graduation: 1987
SROP: 1987
Research Assignment: Toxicology
Graduate Degree Objective: Ph.D.
Discipline: Toxicology

I grew up in Baltimore, Maryland. I attended Baltimore Polytechnic Institute which is a high school for students who are interested in engineering or science. During my first two years, I was a rather mediocre student but then, all of a sudden, in my senior year I just blossomed. I graduated not really knowing what I wanted to do; I decided to sit out a semester before I went to college. My first five semesters in college for the most part, were disastrous. I was in chemical engineering. I didn't like what I was doing and I didn't like where I was. I ended up flunking out. I took the advice of my mentor, and decided to transfer to Morgan State where I went from a C- to an A-student. I also changed my major to my first love—chemistry. I became interested in science when I was either seven or eight years old when I got a "toy" chemistry set. I remember mixing every single chemical in a little dixie bathroom cup and watching the reactions.

I really had what it took to be a chemistry major and I did well. I didn't consider a career in research until I became a MARC (National Institutes of Health, NIGNS-Minority Access to Research Careers Program) student. I wondered, "Do I have what it takes to do good research? Is my background as solid as I think it is?" But, I didn't let these fears hold me back. You never know until you try. I found that the more research I did, the more curious I became, the more I liked doing research. One of the most enriching experiences for me was interacting with the other interns. We would have discussions about science from time to time. We might talk about starvation in Somalia, for example; about the technology needed to take non-fertile soil and make it fertile again. So you get into plant science, soil science, the whole field of food science, in general. We soon realized that many things are related from one field to another, and how that relates to a more global picture. It made me feel good. The greatest challenge was maintaining a spirit of tenacity and continuing even when the experiment didn't come out the way you expected, or when you get results that are uninterpretable.

I applied and was admitted to all of the graduate schools of my choice, with all expenses paid. MIT wasn't my first choice, but when Steve (Professor Tannenbaum), invited me to visit, we hit it off, and he made it clear that he wanted me to come to MIT and join his laboratory—it made the difference. The reality of graduate school was like entering a

whole new world. I got here and found out ... Yes, I do have what it takes. I'm not a perfect researcher or perfect scientist yet, but I understand a lot about what it takes to do research: the tenacity, the financial commitment, the personal commitment.

I don't think my family understands much about my life as a doctoral student. They understand it's a huge accomplishment, they know that whatever I'm doing it's taking a lot of time, and they'll be glad when I finish school. My father will be proud to talk about his son's Ph.D. and my mother is just concerned about me pushing myself over the edge.

Steve has been a good mentor because he is so straight-forward. He's good. He challenges you. Sometimes, the only way to shut him up is to prove your point; you've got to go back, repeat the experiment, and show him that you are right. To do this you have to be good, you have to be solid, you have to have your proof. At the same time, he is understanding and will listen if you have personal problems.

I have a strong interest in health issues and especially health issues that affect African Americans. At one point I thought that I wanted to be a professor, but now I'm not so sure. I think I owe myself a chance to do what I want to and to take care of my curious nature. To do your work in academia, you have to go out and raise money, and supervise your research group. It's not enough to be good anymore; you've also got to be lucky. My goal is to make sure that I'm happy. What makes me happy is pursuing or working to alleviate my sense of curiosity with respect to science.

The summer research program taught me that with research you get out of it what you put into it. My advice to those considering the Ph.D. is to go for it. Don't be afraid to fail, and don't let somebody else tell you what you can or cannot do. No one can truly tell you what it takes because for every person it's different. You will decide how much time and effort you want to put into it, and how bad you want it. Know what you want to do and find out how to do it. You have to be prepared to do whatever it takes.

STEVEN TANNENBAUM

Professor of Chemistry and Toxicology
Faculty Mentor

Years of Academic Teaching: 30
Years of Involvement in SROP: 5

I think the major strength of the program is that it gives you an opportunity to get people here and see what they can do. My experience, so far, has been very positive. The people that come into my lab have worked very hard and have shown a definite talent for doing research. They've gained the confidence to see if they can do research at a level like MIT.

If you want to accomplish something you have to get people to understand what the problem is and what contribution they could make to the solution. One of the best parts of the program, in fact, is that they have to give a seminar at the end of the program. The performances, overall, are just incredible. I'm just blown away by how good they are. It shows that the students gain a real understanding of what they're doing.

The only way I could bring a young person who doesn't have a lot of laboratory experience into my lab is by having someone be a mentor. Basically it's an apprentice system. It's that way for starting graduate students, as well. For me to bring someone in means that I have to find a senior person, either a graduate student or a postdoc, who is well advanced on a problem and who is in a position to take on someone for that period of time. Fortunately my group is big enough that I've been able to do this. That's really the level of mentorship that's required, you need someone who can take them into the laboratory and show them, in a hands-on way, exactly how you operate in a laboratory.

My participation in terms of time is not tremendous because essentially I meet with the student and the mentor on a regular basis. When the students first arrive on campus, I spend time explaining the background of the project, assigning reading, and giving them some idea of what they're going to be doing and how it fits into the context of the overall project in the laboratory. At the end, I work with the student in terms of trying to pull it all together. In the middle, I meet weekly to see how things are going and to iron out any difficulties that come up which might require changes in direction or techniques. I spend the most amount of time at the start of the project and at the end of the project. I'm sort of the conductor of the orchestra and that's the way it works. My style is based on two facts. First of all, I'm interested in what's going on in the lab. I go in and I bug everybody; it doesn't make any difference what color they are, where they come from... if they're working in my lab they'd better perform and if they're not, I'm going to ask why not. The second thing is that I care about all the people in my lab personally.

As the person who's in charge of admissions and recruiting for the Division of

Toxicology, I can say that this program has been very popular with our faculty. We see the minority interns as a tremendous untapped pool of talent. There has been a lot of enthusiastic participation and I think, from a purely selfish point of view, we just see this as an opportunity to find talented young people and it's pretty much worked out.

I have nothing but praise for the program. I also think that if we were to expand the program to more departments, we would not have trouble identifying faculty that would think this is an exciting idea. MIT is fertile soil for this kind of thing. People are genuinely interested in trying to expand beyond the base of the typical constituency. Some faculty members may think that they are taking a chance, but once they see the rewards of participating, that will get them over the kinetic barrier of getting more people into their programs.

GENE BROWN

Professor of Biology
Former Dean, School of Science
Faculty Mentor

Years of Academic Teaching: 40
Years of Involvement in SROP: 8

It was the winter of 1985, I was Head of the Biology Department, when the Associate Dean of the Graduate School, John Turner, approached me about the possibility of starting a program of this sort, and I felt that it was a good idea. It seemed like a very good way of stimulating underrepresented minority students to go to graduate school, which is really what we needed to do at that time and still need to do. That first year, the program was wholly financed by MIT, so we were able to get eight students placed in laboratories within the School of Science. The program has progressed from eight students up to the present number, which is in the high-twenties to thirty. I've been involved in and supportive of the program from the very beginning. In the initial stages, we had no problems, as I recall, getting enough faculty lined up to take on the students. Now it is quite the opposite. Now that the program has grown, we may have some challenges finding faculty volunteers who will be around for the summer, but we have not yet had any real problems in placing students. When I became Dean of the School of Science, I was in a position to help, at least as much and perhaps even more, in any way that was necessary. I have attended all of the research presentations except one when I was on vacation one year.

I think that, all in all, it's really been one of the big success stories here at the Institute. We've succeeded in attracting some minority students, motivated students, students who are enthusiastic and certainly appreciative of the opportunity to come to a place like MIT and find out what research is all about. We've been able to follow most of those students and the proof of success is that most of them have gone on to graduate or to medical school.

There are many strengths to the program. I think the enthusiasm with which the faculty and the students enter into this arrangement each year is a definite strength. I've been absolutely flabbergasted by the enthusiasm of the students who come in here and are willing to work hard. And since I've attended all, or nearly all, of the presentations, I'm equally flabbergasted at how much knowledge they can assimilate in a few weeks during the summer and can talk knowledgeably about, not only what they've done but about the background of each project. Another strength is that we have been able to stimulate the students to apply and to enter graduate schools. I believe that the students who come here and have a good experience will go back to their institutions and talk about how

much they've done and how much they enjoyed being here. Word of mouth, of course, is a very effective way of advertising. I think another strength has to do with our faculty rubbing elbows with underrepresented minority students and the realization that there's a lot of potential there to be tapped. Hopefully, we'll stimulate departments here at MIT to work even harder to recruit underrepresented minority students.

I worry from time to time that we increase the hopes of the students that they will matriculate at MIT. Then, if they apply and are not accepted for one reason or another, usually for more than one reason, they will be disappointed. They ought not to feel discouraged and should go right ahead and pursue their careers at other places. MIT isn't the only place they could apply to and, in fact, they are counselled to apply to more than just a few places, because this is a highly competitive place. One of the things that I hope will happen is that they do exactly that and, if they're good, we can consider them for faculty positions here at MIT.

I would say to my colleagues at other schools, who plan to develop SROP programs, that: first, you have to raise enough resources—not only to pay for the stipends, but to do a good job in advertising, solicitation, and so forth; then you have to be sure that there's enough enthusiasm among the faculty so that you're not going to have to go around twisting arms. If you have to twist somebody's arm to take on a student, the consequences are obvious. Faculty should be prepared to spend quality time with these students. When I speak to the students, almost to the number, they say that in addition to the research, the relationship they were able to form with their faculty mentor was the most important and enriching part of the program. I hope that we will continue to be able to convince faculty members that this is worthwhile, and that this is something they ought to be taking seriously.

ISAAC COLBERT

Associate Dean of the Graduate School
Program Supervisor

Years of Employment at University: 16
Years of Involvement in SROP Management: 5

The summer research program provides students an opportunity to work in a high-powered research laboratory. They get to meet with faculty members who are at the top of their fields and to work with them in a realistic research setting. It gives them an experience that they can use to assess their interest in and willingness to carry their own educational programs through to the graduate arena. They are expected to learn a number of things from this experience: something about themselves and their motivations, something about what it's like on the day-to-day basis to do research in a setting like MIT, a few practical things about how to negotiate their entry into graduate school, and practical skills applicable within their fields. They are also exposed to people of color who are successful so that they come to understand that they, too, can be successful.

The program's greatest success is in showing students that they can perform at places like MIT, and perform well. It brings to the attention of these students some new, perhaps exciting, opportunities. It shows our faculty that there are many students of color, from places they may not be familiar with, who can come to MIT to do very good graduate level work and who have the potential to get their doctorates. The program has been growing, and I view that as a sign of its success, but it costs money to run and these costs are rising every year. Securing a stable financial base is a problem. Another concern is the degree to which it has fully penetrated the faculty. We have a pretty stable group of faculty who participate in the program and who really want the students, but I don't think we have as many as we ought to have given the size of MIT and it's stated interest in really affecting the underrepresented minorities who are interested in their fields of endeavor. However, I think these are things we can continue to work at and, hopefully, do something about.

I would advise other institutions who are thinking about establishing a summer research program to be very careful and they take realistic stock of what their faculty members are willing and able to do. They must carefully plan a suite of activities that will give the students very serious and sustained exposure to role models. It is important that the faculty design research experiences that are substantive. The greatest potential harm that a program like this could do is to bring students in and give them some mickey mouse research programs that are not a part of the on-going research efforts and then just stick these kids

off in a corner doing something that's supposed to be research. I think that people need to realize that to do these programs correctly costs a lot of money and staff time, and that the up-front costs are going to be more than they seem to be on the surface. The university has to be prepared to make that level of commitment and sustain that commitment over at least a five-year period to have any kind of success. Finally, a very clear decision needs to be made about what kinds of students they want to bring to these programs and how to attract them. It's easy for programs like these to look for the stars. If we're going to have long-term impact, we have to find populations that are not now participating in the graduate enterprise and find a way to attract them.

The most significant thing that is happening here at MIT is that faculty members are coming forward to support these students on their own. They are looking into their own internal resources to bring more students in who can take advantage of the day-to-day activities of the program. I think what this shows is that over the years faculty have seen, themselves, how well the students have performed, how dedicated they are, how smart they are, and what these students can do. They are convinced that minority students can perform if they get the right advice, encouragement and access to research opportunities. Now some faculty are forging ahead on their own by identifying students and bringing them here, and I think that is of great significance.

TEMPLE UNIVERSITY
Philadelphia, Pennsylvania

Temple University Summer Science and Engineering Program

Years in Existence: 8

Number of Students per Summer

1986: 10
1987: 10
1988: 10
1989: 17
1990: 15
1991: 11
1992: 10
1993: 11

Participating Departments: Anatomy, Biology, Chemistry, Electrical Engineering, Geology, Microbiology, Pharmacology, Physics

LORETTA WILLIAMS

Hometown: New Orleans, Louisiana
Undergraduate Institution: Xavier University
Major: Biology
Year of Graduation: 1991
SROP: 1990
Research Assignment: Pharmacology
Graduate Degree Objective: Ph.D.
Discipline: Pharmacology

I attended high school in New Orleans. The school was pretty much integrated. When I was in ninth grade, there was a program called Upward Bound for high school students to get them motivated to go to college, specifically for students who would be the first generation going to college. Between that program and my mom's encouragement, I went to college. My tenth grade biology teacher was a dynamic person and she's the one who really turned me on to biology, so I decided to major in biology. I almost lost my interest at the first college I attended. The professors there were notorious for not wanting to be involved with undergraduate students. I was a work/study student in the chemistry department, and they absolutely did not want to be involved with the students. I actually heard them saying they didn't want to be bothered. I got a D in chemistry and I know why I got a D, but once I transferred to Xavier and had organized teaching, things changed for me. At Xavier, faculty told you the objectives of the course, what you needed to get out of the course, and they gave you a lot of extra help. It wasn't easier, just more organized, so I knew it wasn't just me.

Since I was in the sciences, the whole concept was medical school or a job—those were the only two options for me. It was a miracle that Temple started this program at a time when I needed a job. The graduate school coordinator was the first person to mention graduate school and the Temple SROP program. I was dumfounded because I didn't know anything about graduate school. He teaches zoology and microbiology courses at Xavier and is dynamic. When I applied and got admitted to Temple for the summer program, I began fantasizing about making great breakthroughs, perhaps even being a co-author on a publication. But mostly I had fears that I wasn't going to know enough, or that I had a shaky background having had to change schools and dig myself out of the hole once I got to Xavier. I didn't know anything about research, so I was scared to death. Everybody had expectations. I knew I had to make Xavier look good, and I had to make myself look good—cause my mamma would kill me if I didn't! I had fears that I wouldn't be able to do scientific research, but after they gave me some background materials to read, eventually, I began to feel more comfortable. Plus, I was going to get undergraduate school credit, and I decided that if I was going to get credit I might as well get good credit.

If it hadn't been for the summer research program, I would not be in graduate school. It was a turning point for me. I was really involved in what was going on in the lab and I took note of everything. My project was to build two tiny micro dialysis programs to dialyze the fluids in brain tissue. I actually built a tiny probe that you can hardly see, with my own hands. All you have in mind are the things that people say you *can't* do. There are strong environmental influences like what you see on television—everything (involving science), shows white people. So this experience really helped me to see that whatever I set my mind to, I *can* do. It lifted my self-esteem. It's good to let students know that they can do something with the knowledge that they gather in undergraduate school.

My advisor, Dr. McElligott, is the same person that I worked with that summer. I'll most likely do my dissertation research with him, too. He encouraged me to consider graduate school from the word go. I was on fire when I went back to Xavier my senior year. It was as if nothing could stop me, nothing and nobody, because I was in control of the situation.

As far as my career is concerned, I'm torn between industrial research and the academy. On most days I want to go into industry and do research, but I think with teaching, my schedule would permit me to be involved with family life. I definitely want to have children. In either case, I'm going to finish this program. I'll be the first in my family to get a Ph.D.

SERGE JASMIN

Hometown: Albany, New York
Undergraduate Institution: College of Staten Island
Major: Chemistry
Year of Graduation: 1988
SROP: 1987
Research Assignment: Chemistry
Graduate Degree Objective: Ph.D.
Discipline: Chemistry

I grew up in New York, the Borough of Queens, and attended Flushing High School which was a racially-mixed school. It was mostly white but the neighborhood included people from all sorts of ethnic backgrounds: Hispanics, Asians, Blacks and occasionally Indians. However, the teachers were always white, with one exception, Mr. Simmons. I had the opportunity to have him as a high school chemistry teacher and, thinking back, he was probably one of my influences to go into chemistry because he was my first black teacher. He seemed to take an interest in me. He saw something in me that I didn't see. Sometimes he would come up to me and say, "Serge you can do it." I was more prone to joking around, talking in class, never listening, so at times he would call me aside and say, "Work hard. You have the potential." I never realized it before, but looking back, I remember some of the things he said to me and the way he spoke to me. He was always encouraging me.

As a teaching assistant, I'm trying to give students encouragement like Mr. Simmons gave to me. Also, for the last couple of years, my advisor was supervising the summer students, so I had the chance to, in a sense, give back. My main dream is to give back to the Black community because going to school, and especially college, I never had any Black graduate students who were there that could help me. So I'm trying to change that in my own way. Most of the summer students want to go to medical school, so I try to talk to them. Before I went to graduate school I was a pre-med student, so I know what it's like.

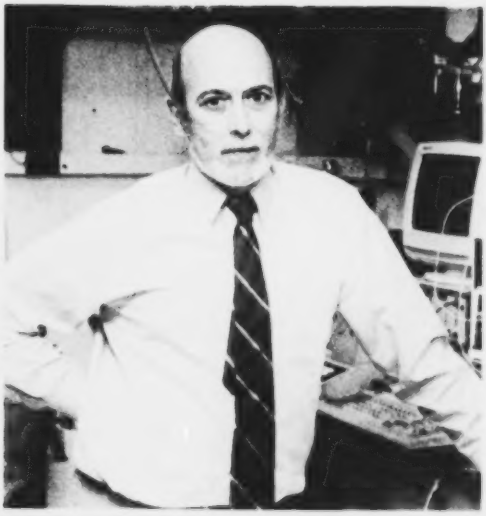
The summer research program was one of the best experiences I've had in my life. If it weren't for the program I would have probably gone back to work in the airport where I was a cashier in the parking lot. I was very happy, and very anxious. Anxious and afraid. My worse fear was failing because I was always the type of person who didn't want to fail. Also, I didn't want to let my mentor down because he thought that I might succeed. The challenge was the pressure I put on myself to achieve.

I was very surprised when I arrived at Temple that summer for my research program. Here was a whole room full of Black students in physics, mathematics, engineering, chemistry and biology! It made me feel good, because I saw there were more people out there besides me who had an interest in physical sciences. I was not accustomed to see-

ing Blacks in any of my classes at college or in the sciences in general. Besides that, we had similar outlooks on life, what we wanted to do with our lives, what we wanted to pursue in life. It was interesting. I had the idea of going to medical school but something strange happened when I started working in the lab. I guess the freedom I had in the lab working with Dr. Dalton made a difference. Somebody trusted me. The strange part was that I was spending a lot of time in the lab and I liked it. It sounds weird but I enjoyed being in the lab doing experiments. I was there early in the morning and I was about the last one to leave the building. Sometimes, before I left for the night, Dr. Dalton, who is now my advisor, would sit and talk with me. The day I left we had lunch together and he complemented me about my work in the lab. I tried to be modest about it. He was always saying that if I ever wanted to go to graduate school, I would be good at it. He said also that if he was sick and I was a doctor he would come to me. That made me feel good. The last thing he said to me before I left was if I ever changed my mind about going to medical school there would be great things happening in chemistry. "If you change your mind," he said, "give me a call." This was the pivotal point for me.

I like chemistry because it is challenging and I'm the type of person who thrives on challenge. I haven't decided what my dissertation title will be yet, but basically I have an antidote for cyanide poisoning. At the moment, my goal is to finish as soon as I can, hopefully within a year, and pursue a postdoctoral position.

My primary sources of support come from within the program. I've made friends and I get a lot of support from my advisor. I don't get support from my family; nobody calls me at all. So, basically, I made the decision to pursue the Ph.D. on my own. I just want to pursue my dreams.



JAMES MCELLIGOTT

Professor of Pharmacology
Faculty Mentor

Years of Academic Teaching: 21
Years of Involvement in SROP: 3

The summer research program provides the students with an opportunity to gain experience in a research laboratory and to see what the business of science is really like. It's an apprenticeship, especially in the sciences. I expect the students to learn. I work in the area of neuropharmacology, or brain research, so they come in and they learn how to do animal preparations and analyze stuff, most of it is pretty standard. They should go away with a good idea of what living, working, and doing things, as a scientist, is all about.

As an example, when Loretta Williams came in we had a standard procedure for doing things and I told her how to do it. But Loretta was always trying to find a better way to do things, which was really good because it showed me that she was not just satisfied with (standard) procedures, and I think that's an outstanding quality in a student. That impressed me considerably.

I decided to participate in the program because I could provide an opportunity for these students to gain some experience and to see if they'd like to work as a research scientist. You probably put in more effort because the student is starting from ground zero and then building up from that, but the ultimate pay off is if you can have a student come back into the program. The other pay off is if you inspire students to perhaps change their career aspirations. I like doing it. I've been doing it for a number of years and find satisfaction in being a faculty mentor.

I also believe that the SROP experience helps the individual in the admissions process. We've had a number of students come through—who probably wouldn't have been admitted to graduate school because the competition, based on GREs and GPAs, is so rough. But grades don't always tell you the talents of an individual. I think you've got to bring them in and you've got to talk to them. Our department is very good at this stage; I think it's a very nurturing environment.

Programs like the SROP's should increase because I view this generation coming through as basically the seeds. These are the people who are going to be the role models for the kids coming after them. It's people who have a common background, and who have gone through this experience, who will attract more and more students to our pro-

grams. I tell colleagues about my own experience. I found it very beneficial to see the students who have come through and see what they're working for. Yes, you might be putting extra effort into it in the beginning, but there are double pay-offs; you might be able to attract a student to your laboratory and you can basically do your job and serve as an inspiration in guiding these students.

DAVID DALTON

Professor of Chemistry
Faculty Mentor

Years of Academic Teaching: 28
Years of Involvement in SROP: 4

I happen to be a chemist who is in love with this thing called chemistry—she consumes me. If a man or a woman comes to me and says, "I want to do chemistry," I'm delighted to work with them, period. That's how I got involved with the summer research program. The idea was: here is an individual who has expressed interest in doing chemistry, how would you like to work with him? I said, "Fine, I'd love to." Since that time my involvement has grown.

Serge Jasmin, one of my SROP students, unwittingly fell into my clutches just after I had received a fairly large grant from the Department of the Army for a research project. I had, at that time, two groups of graduate students who were working on that project and I decided that I wanted to play, too. Serge was then, and is now, enthusiastic. He was then, and is now, sensitive and bright and thought that working in the lab was a lot of fun. So we worked together, side by side, and really enjoyed each other's company. As a consequence, he had a more than usual profitable summer learning techniques, and enjoyed "playing in the sandbox" doing chemistry. It was a lot of fun. And I think that good experience may have contributed to him wanting to go on into chemistry.

I don't take students lightly. When one takes a student, one establishes a relationship, which presumably is going to last for many years. Because of that I don't take the responsibility of working with a student lightly. I will have, for better or worse, some sort of influence on their future and that is a responsibility which is not always easy. But I tend to believe in all my students as long as they're interested in doing chemistry.

I'm not sure that the benefits of the program can be listed as one does on a balance sheet. Some people, of course, can and I'm sure have cavalierly said, "I'm going to do this because it is good, right, just, and proper." However, to do that you really must spend time with people or arrange to have someone spend time with them. If you can't do it yourself, then presumably one of the students you have working with you has expressed some interest in this and looks upon it as a serious undertaking. We have serious discussions in my research group. Each of my graduate students understands that: a) if I'm going to bring one or more people in they have a responsibility which they have agreed to exercise if we do this, and b) that responsibility has costs in very tangible terms. You will find, I'm sure, some faculty will say, "Yes, I will do it," and mean it and they will give up significant amounts of their own time to help. But there are papers and pro-

posals that don't get written, there are ideas that don't get put down, there are things that are not done, because you are doing this with this student.

From my point of view, the problem of attracting students of color to graduate programs is this: For a person of modest abilities such as myself, I find that I have to devote a life to doing what I'm doing. For the most part, when most of us give up one way of life, we replace it with something else. Remember the old proverb, "Don't give up your present way of life unless you have something of value with which to replace it." The summer participants are no exception and we try to turn them around. To those men and women who want to succeed, many of the things that occupy their time and thoughts have to be replaced by firm knowledge and understanding. If this experience is going to be worthwhile, the student must, for those ten weeks, and perhaps longer, set aside other things. When Serge was here that first summer that's what he did, six days a week, early in the morning until late at night, we worked and worked and worked. That's what you do because that's what is required. Pretty soon it gets into your system.

But Serge, as an example, is encumbered by what he sees as his responsibility to the Black community. He is encumbered by the need. We have discussed it in some length. He has, I think, decided that too many men and women of color, once they have reached a certain economic status, leave the community. And that the role models are therefore not available to the children of the black community. This dilemma will haunt him because presumably if he marries, it is going to affect the person with whom he chooses to live and his children, should he be so fortunate. All of them will suffer the consequences of that decision, or rejoice in it. This requires being able, which is a very difficult thing, to stand aside from the milieu in which you find yourself. These students have to ask themselves, "Is chemistry worth it? How can I possibly be someone other than who I am? How can I possibly change the way I view the world?" It's a mind set. If you want to commit yourself to it, well that's what you do.

We cannot sever the nerve of action and give up to despair. That is out of the question. What you do is you find another 'finger to put in the dike.' You once more take on a young man or woman and hope that with a prayer and hard work they will succeed. The final choices are in their hands. The entire society is pushing them in one way and you are trying to stand against the tide. I think that many young people become discouraged. They see themselves standing alone—but they're not alone, many of us are standing with them.

PETER GOODWIN

Professor of Geology
Program Manager and Faculty Mentor
1992 Temple University *The Great Teacher* Awardee

Years of Academic Teaching: 30
Years of Involvement in SROP Management: 4

Given Temple's history as an institution that has traditionally served the first generation college student, the SROP concept really fits right in with our general philosophy. I wasn't in on the beginning of our program, but I have directed and cultivated it in the last two years with Dr. Hill, and have directed it for four years now. I got involved because Jack Nelson, then Dean of the Graduate School, invited me to direct the program. I'm very pleased with the experience.

The directorship requires some logistical things such as the application and selection process, arranging for housing, some budget work, and soliciting faculty to participate in our weekly research seminars for the students. I also work with the development office where I helped write a grant proposal this year. We haven't heard yet as to whether we've been funded or not. I had naively expected that things would just sort of grow, that we would get more and more industrial support, and we did for a while, but then it plateaued and has even dropped. I would like to see the program strengthened by eliminating some of the uncertainty.

Most importantly, I have to find supervisors. I have to know the faculty in order to know which ones are going to be good supervisors, who are going to hang in there for the full ten weeks, and provide the right kind of environment with a team of graduate students and faculty. I think the basic problem is, even in an institution this large, finding an adequate number of good placements for students is not easy. It's just that there aren't that many faculty who are willing to take on the responsibility and the activity involved. Some faculty have volunteered and it hasn't worked out well but I've learned, by trial and error, which faculty I can rely on and which ones I can't. We want real hands-on laboratory experience and/or field work. The faculty who volunteer are generally pretty good; they learn the ropes as they go along realizing that it isn't simply a matter of assigning this new student to their right hand teaching assistant or research assistant, but to be involved in a more first-hand basis. It really works when the faculty mentors take a personal interest in the summer research students, integrate them into the team and also spends a little one-on-one time with the students. I've been pleased that we've had, consistently, a good double handful of faculty who have been willing to do that and show their involvement by coming down to our presentation day and witnessing their student

or other students make their presentations at the end of the program.

I try to match up students both with the appropriate interest and what looks to be the potential to accomplish something, and the potential for graduate school. That part is tricky because the certainty of going on to medical school looms very large for many of these students. Even though it's not a sudden process, the student can see the end; there's a prescribed program and if you qualify and keep your nose to the grindstone, you'll come out the other end as a doctor. There are all kinds of predictions about the kind of money you'll make and the status you'll achieve. But when they look at graduate school, they ask, "Do I go get a Master's, or do I go on for my Ph.D.? When do I decide? What's the difference any way? When I do get my Ph.D., then what have I got?" You haven't necessarily got *the* ticket. You've got what turns out to be a ticket to do more work, the same kind of work you're doing. All that uncertainty faces first generation parents who have never been there, so it takes a lot for them to say to a kid, "Go ahead and do it." Despite these challenges, the bottom line is that I'm more interested in providing a program for students who are going to Ph.D. programs than to M.D. programs.

I think the strengths are that we have good active research teams and that it works well most of the time. The students fit into this nicely, and I think they really do a lot of first-hand research. I think it's not only good for the students, I think it's good for Temple's science departments. The success stories from this program have changed some attitudes in the science departments. They are willing to look at credentials of people who come in with GRE scores that aren't necessarily great, and maybe they don't have the highest GPA in some cases, but they've seen these people work out very well and they are willing to look at more students. It has increased our diversity, and in geology, which I know best, we now have two students in our graduate program who were summer research students in previous programs. *Big* difference. We were having no success getting minority students in our program and we now have two African American students and they're great additions to our program. Diversity to me is a real positive thing and is one of the benefits of the program for the departments, for the students, and it has tremendous benefit for the university.

CORNELL UNIVERSITY
Ithaca, New York

Ford-Mellon Minority Research Exchange Program

Years in Existence: 8

Number of Students Per Summer

1986:	8
1987:	6
1988:	8
1989:	8
1990:	10
1991:	10
1992:	11
1993:	12

Participating Departments: Africana Studies, Chemistry, Civil Engineering, Development Sociology, Education, English, Government, History, Human Development and Family Studies, Human Service Studies, Psychology, Sociology

CLIFF ALBRIGHT

Hometown: Bronx, New York
Undergraduate Institution: Cornell University
Major: Business Management
Year of Graduation: 1992
SROP: 1991
Research Assignment: Economics
Graduate Degree Objective: MPS
Discipline: Africana Studies

I grew up in the Bronx, New York, in an area called Co-op City. It was a good neighborhood, good schools, good friends. Now it's pretty much gone into decline. I went to a special high school in the city, Bronx Science, where you have to take a test to qualify. It was challenging in a couple of ways, in terms of academics and the racial make-up. It was only about 10% Black people, the rest was an even split between White and Asian. That was interesting and different from what I experienced before high school. It also had a reputation. People wanted you to get good grades so that you would get into a good college. Generally speaking, the environment was one in which you were being supported and being pushed. However, I think that when it came time for Black students to apply to college, there were a few guidance counselors who discouraged us from applying to particular colleges. For example, although I had a 92 average in high school, my guidance counselor wondered, "Why are you applying to four Ivy's: Penn, Cornell, Brown, Dartmouth?" I thought, "I'll take my chances." I decided on Cornell mainly because I fell in love with the campus. I wanted to get away from the city. I planned to be a business management major and my career aspiration was to make a lot of money. I wanted to own my own business one day.

I participated in the summer research program after my junior year. I can't even remember how I found out about the program. When I applied I was kind of up in the air, just starting to think about continuing my education. I was really not focused on what I wanted to do, but I was interested in some aspect of the sociology of the Black experience. Dean Reynolds had to sit me down to work on placement possibilities because I did not have a sociology background. I was ultimately matched with an economics professor. When I spoke to my summer mentor, it took us a while to find a compromise in what we both wanted to do. I wanted to do political economy, with more of an emphasis on the political part, but he wanted me to have an emphasis on the economics part, so we played around with that for a while until we came up with something that worked. I was worried as to how much hard core economics he would have me doing and how much statistics would be involved. I wondered if I really would be able to do the things that he might expect of me. But it was great! It was a good experience and I liked working with him; we had a good relationship.

I think the most enriching part of the summer research experience was my relationships with the other students in the program. I still keep in touch with some of them. I met people from all over the country who had similar backgrounds and interests. I got to hear and understand different perspectives. I found that some of the things I was dealing with were the same challenges they were facing. I got into conversations about career objectives and where I wanted to be—things like that. We learned a lot from each other and also had fun in the process. The program itself is also very positive in that it helps you see what graduate school is like. It may not persuade you to do it, but it does give you more substance upon which to base your decision. Also, it gives you exposure to other graduate students who tell you about the process, because that's what it's all about. Sometimes, not even what you know or how well you write is as important as how well you go through the process.

My focus is on international political economy. I'm looking at regional cooperation in southern Africa and what it would take for these countries to work together and put aside national interests in favor of regional interests. I'm also looking at the mechanisms of international aid and its relationship to the funding organization's goals and incentives. Eventually I want to teach at the university level... eventually. I was considering going straight through, but I don't want to get a Ph.D. without any field experience. It's very frustrating to read about international development issues without having any images to attach to them.

I made up my mind to go to graduate school at some point during that summer of the SROP. I can't say when exactly, but I enjoyed doing research and being off in the library looking for stuff. I was thirsty for more knowledge. There's too much that I need to know about myself, about other people, and about the problems that we face. There's too much I need to know before I can go out and make any real changes.

DIONNE ESPINOZA

Hometown: El Monte, California
Undergraduate Institution:
University of California at Berkeley
Major: English
Year of Graduation: 1990
SROP: 1988
Research Assignment: 19th Century American Literature
Graduate Degree Objective: Ph.D.
Discipline: English

I grew up in a lot of places, my family was very upwardly mobile. We started out in an apartment in Los Angeles, and now we live in Claremont. I went to an all-girls Catholic school which was predominantly Latina. I think it was very important for me to be in an environment where I was a majority person. It was also an environment that nurtured women's empowerment. Something about that school made it possible for me to go to college. Neither of my parents went to college, although both of them graduated from high school, so I am the first person to venture out. I applied to Stanford, Berkeley and Yale, got into all three, and attended Berkeley because my parents couldn't afford Stanford or Yale. Berkeley was a little difficult for me. I was used to being the star student in the class. My first semester there I had a pitiful GPA as a chemical engineering major. Second semester I had to take some classes over again. I managed to do much better in calculus and chemistry, but I still hated chemical engineering. It wasn't until my third year, the year before I went to the summer research program, that I finally thought maybe English or the Humanities would be more of interest to me. I didn't know what I was going to do after that. A Chicana who worked in the Dean's office recommended the summer program to me as something I should think about, so I decided to apply.

I was so excited about the fact that someone was going to pay me money and fly me out to the East Coast. I was going to be at a place I had heard good things about, to explore the possibility of graduate school. I had more expectations than anxieties. I really didn't know what I would be doing in the way of research, but I figured whatever it was I would just do it. I went into it fairly blindly but I remember feeling very lucky that I was selected.

My mentor, Professor Samuels, was really wonderful to me. She talked with me, listened to me, encouraged me a lot, answered any questions I had about graduate school, what it meant to be a professor, how the tenure process worked, all that stuff. In terms of my research she was very encouraging and said I was doing a good job. It was the first time I got to do real research: to get dusty old books and to read through them. It was really amazing because I hadn't experienced anything like that before. The most beneficial thing about the program was working with the faculty member and just being in the

environment, the actual physicality. But the greatest challenge for me was being disciplined in the summer while wanting to have fun and feeling really constrained in Ithaca. But in the end, I realized that I read more than I thought I had, and did a lot more research than I thought I could. Even though Ithaca wasn't the best place—it's kind of isolated, there aren't any other Latinos around, there aren't many people of color, period—I had enough of a sense of the English program at Cornell that I decided to apply. Following my fifth year, I applied to nine prestigious schools and got into all of them. I stuck with Cornell.

I currently work on twentieth century American literature about women of color, African American, Chicano and Asian American in particular, looking at social movements and multi-culturalism. It's not just literature. It also integrates political theory, sociology, philosophy, and literary theory. If I were to advise someone of color about pursuing a doctoral degree, I'd tell them to be sure you can see yourself dealing with a lot of things beyond academics. There are a lot of psychological questions and pressures about how good you really are. Be sure you can deal with racism, it's so incredibly covert. You have to have the street smarts about racism and about how it works. One of the things they did in last year's program, which I thought was good, was that professors and students of color shared their experiences and strategies for dealing with various forms of racism. In some ways, no matter how prepared you are, you're not always as prepared as you want to be. For example, there are some faculty and students who do not acknowledge that my field, Chicano/Asian American/African American literature, is a valid field of inquiry. This is a very difficult thing to handle without taking a toll on your self-esteem.

I plan to become a university professor, hopefully somewhere in California, preferably at a four-year college with a diverse undergraduate population. I hope to do a lot of research on the Chicano movement, interview people, interview activists and do stuff that would get me out into the community. One of my ongoing concerns is what's going to happen to our "community." I think about where I came from, where my parents came from, and I realize that my parents had to leave in order to make it possible for me to have a "better" life. How can we make it so people don't always have to leave their community behind? I'd like to mentor high school students, to let them know there are role models for them so that they can envision themselves doing it as well. I never would have imagined when I was graduating from high school that I would be doing this. I definitely feel that I've expanded as a Chicana intellectual in a way that I never dreamed possible and that makes me feel good.

THOMAS LYSON

Professor of Sociology
Faculty Mentor

Years of Academic Teaching: 16
Years of Involvement in SROP: 3

I reflect on my own experience. I was one of four kids in my high school graduating class to go to West Virginia University. All the others, if they continued their education at all, went to either a community college or a small four-year school in West Virginia. We just never thought of anyone going to Cornell. Programs like these can open up doors to students that have not had doors opened up before; it's an untapped vein. If we are going to regenerate the academy, we have to dig down to the first generation students and others. The more we can do, the better.

I work with both the Ford-Mellon Program as well as the MARC(COR) program, which brings in students from Historically Black Colleges and Universities. These programs expose the students to a range of opportunities. I would like to see these programs opened up to include students from schools outside of the range of the elite institutions—major research as well as the traditionally black schools. We might begin to identify minority students at small liberal arts or even big state schools where they're sort of hidden. Some of our fellowship winners in the last few years have been coming from these kinds of schools. Most faculty at large research institutions don't know what it's like at a South Carolina State or Southern University. They've never been there. They hear a little bit about it, but they've never worked with faculty from these schools. Until you go down there and really interact, you don't realize that some of those faculty members will teach five or six courses in one semester and then be pulled in for administrative duties. The students who go through these schools can get a very good education or they can get a very shoddy education. I can say that because I've been there.

As a mentor, you have to tune into where the students are coming from because many carry a lot of baggage with them. Cornell can look like just another stepping stone on a career ladder or a whole new world to them. We try to open up the academy to these students. Once we get them on the path and give them that initial push, we've got to make sure that they don't fall off. One summer, I had a student from a small school who was overwhelmed when he arrived at Cornell. So, I took him aside and said, "Look, this is another ball game, new rules, we play above the net as they say here. It's very intense. There are very aggressive people and they're going to push you all the time, you really can't slack off." We had several straightforward conversations such as this and I think he appreciated it.

I do this because I really like to do it and I'm committed to it. It's rewarding and I'm in the position where I can do things that I find enjoyable. I've got the chance to do this, so why not? The more we can bring people in and bring diversity into our fields, the better. For any discipline, if you can tap good students who have not been tapped before, and open up opportunities, everybody benefits. We should all be doing this because it makes a better world. I know it sounds corny, but if you're committed to diversity and opportunity, then do it.

Another way we can approach this is through the professional societies. I'm program chair this year for the Rural Sociology Society. The Ford Foundation gives money through the Society, to bring minority scholars and students to our annual meeting. We write all the minority members a personal letter asking them to participate, to present a paper; anything they want to do we facilitate. It's the right thing to do. If you want to open it up, you do it. The reason it happens in the Rural Sociology Society is that there's a core of faculty members who want it to happen. That's the bottom line.

ELEANOR S. REYNOLDS

Associate Dean

Years of Employment at University: 6
Years of Involvement in SROP Management: 6

The Ford-Mellon Minority Research Exchange Program is eight years old. President Rhodes of Cornell thought it was an excellent idea when it was presented to him by a group of assistant deans at Cornell, Princeton and Berkeley, and contacted the Mellon and Ford Foundations to gage their interest. That was the beginning of a beautiful relationship which is still going. It has expanded. At first it was just Princeton, Cornell, Stanford and Berkeley. In 1990, UCLA and Yale joined. It's to be assessed as to whether or not it will be expanded again. The program is unique in that it has provided full funding through the current year, which over a period of three years, has exceeded one million dollars. Initially it did not have the exchange component, but I thought students needed to be exposed to more than just a concentrated research experience if we were to prepare them for graduate school. This has certainly made the program more attractive. Several of our graduate students would not have considered Cornell if had they not participated in the program.

Minority students, I think, have special challenges over those of majority students. It can be a self-fulfilling prophesy when you've been told so often that you *can't* do. You begin to believe that you can't. First hand experience shows you that you *can* do. It really introduces the students to the ethos of research education. Here, for the first time, these students work directly with a faculty member. The workshops acquaint them with the application process, including familiarity with the graduate record exam, program selection, the application itself, and financial aid options, as well as the necessity to establish a relationship with a faculty member. We have a very structured program with basic experiences for all students regardless of where they go to school.

Students come to see a faculty member as a friend, not as an enemy or a grade giver. We provide an environment in which they actually rub shoulders with graduate students and post docs. They begin to pick up the language used in research areas. Students have said that the program was beneficial to them because it built up their self-confidence so when they went back to their junior or senior year they were really motivated. They knew the possibilities and their potential and it made them feel better about themselves. It makes all the difference in the world, because you know who you are, where you're going, and how you're going to get there. Once the students have these three things routed in their minds, they are ready to deal with the barriers that are placed in their way and it's full speed ahead.

The limitation of our program is in finding an adequate number of faculty members across the board in all areas, who are willing to take the necessary time to spend with these students. I find that many of the faculty members volunteering are young assistant professors who are on the tenure track, and who take their summers really to catch up with their research to get ready to do what is necessary for tenure. They are giving up a whole lot to work with these students, but they see the validity of it.

The benefit to the faculty is that, believe it or not, there are faculty members in certain fields who have never worked with minority students. This program allows faculty to see students, who might not ordinarily apply, as a viable group to expand the pool of graduate researchers and faculty members. It creates a wider pool and helps them to get a known-entity. We're now tracking students to find out how many do finish their programs, and once they've finished their programs, what are they doing. But we must understand that not every kid who comes to this program is a potential Ph.D. candidate. We are going to lose some, but at least we've motivated him or her to become a better student. I think that too many schools are looking at these programs primarily as recruiting instruments. In the future, maybe we can focus on those students who may be a diamond in the rough. Perhaps the student has a 2.5 GPA, after working thirty-five hours a week to pay tuition, who, with the benefit of this extra push in the summer, might gain the extra self-confidence to say ... "I'm going to do better." We have a tendency to look exclusively at the high achiever—the top 10%. Maybe we need to look at that next 10% and see how we can develop the pool. We cannot afford to continue to overlook that next 10% because life for these students is not cut and dried. Until the larger society realizes that there is excess baggage that must be dealt with, these programs can be effective but certainly not as productive as they could be.

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
Champaign, Illinois

Summer Research Opportunities Program

Years in Existence: 8

Number of Students per Summer

1986: 10
1987: 23
1988: 37
1989: 46
1990: 72
1991: 89
1992: 76
1993: 81

Participating Departments: Agriculture, Applied Life Sciences, Commerce, Communication, Education, Engineering, Fine and Applied Arts, Liberal Arts and Sciences

HARL TOLBERT, JR.

Hometown: Baton Rouge, Louisiana
Undergraduate Institution: Southern University
Major: Animal Sciences
Year of Graduation: 1992
SROP: 1991
Research Assignment: Animal Sciences
Graduate Degree Objective: Ph.D.
Discipline: Animal Sciences

I'm from Baton Rouge, Louisiana. My high school was about 50/50, Black and White, but in the college prep classes there were always only two Black males and about five Black females. I didn't really have very much interaction with other Black students because we were on different sides of the building, we took different classes, and we had different lunch breaks. My sophomore biology teacher took a lot of interest in me and planted the seed for my interest in science. My parents really encouraged me a lot, and for some reason always felt I was special. They implanted in my mind that I had a responsibility to go a long way.

During my junior year, the College of Agriculture at Southern decided they were really interested in recruiting. One day somebody called me and asked if they could come talk to me. They brought a veterinarian by my house and we developed a pretty good relationship. I started to help him in the afternoons and on weekends and it really piqued my interest. He took me under his wing, showed me the ropes, and taught me how to work with the animals. When I went to Southern, I went into animal science. As the years went by, I decided I didn't want to be a veterinarian and treat sick animals every day.

My professors at Southern pushed me into thinking about research because they said they thought I was a pretty creative person. Although I knew there were a lot of opportunities, I didn't really know how to get into genetic engineering of animals or biology with animals, and I was just kind of floating around. The one thing that helped change my mind was coming here to Illinois as part of the summer research program.

My advisor in the lab group I worked with really made the difference. First of all, my advisor saw a lot of initiative in me and he fed it constantly. He would talk to me and I'd go and talk to him so our relationship became more of a friendship. We talked about more than just the research and that really made a difference. It helped a lot because it knocked out a lot of intimidation. We were doing things that I was really interested in—studies with embryo development, embryo survival, genetic engineering waste, putting new genes into animals—and that really fascinated me and got me rolling. Every day I was exposed to something new. I was pretty excited and prepared to go in and work my butt off to make a good impression and to learn a lot. It was a lot of fun. It was just so

new to me. I came here and started working and reading a lot, and my interest just snowballed and still is to this day. Even though I'd heard about it or read about it, being where they were actually *doing it* and getting a chance to do it myself was great. It gave me a lot more direction and helped me focus. The group I worked with that summer is the same group I'm working with now. I'm looking at the role that protoantogenes play in cellular regulation and cell division.

I think a lot of Blacks get lost along the way because we think..."What can I do?" Coming to a big research university, you might get to work on something and that piques your interest more than any book could ever do. Also, I found it interesting to meet professors of color here at Illinois because they were able to relate their experiences and to prepare us for a lot of the things that we would encounter like the racism, people saying that you're here just because you're Black and that in some ways you have to prove them wrong and go above and beyond the call of duty.

One thing I've noticed is that a lot of people thought, since I came from a small historically Black school, I wouldn't really know what to do here. Even though the teaching style here is totally different and the attitude of the instructors towards the students is very different, I've made good grades. I came to the conclusion that no matter what I wanted to do I would have to pay the price even if it meant studying eight hours a day on Saturday and Sunday. I think SROPs are a great opportunity. Since I've been in the department I have spoken to some of the other professors about the program and I think I'm getting some of them interested. There's a definite need. I don't think it makes *all* the difference in the world but maybe if it gets 5% of the undergraduates talking about going to graduate school to increase maybe 10% or 15%, that's a tremendous service. I'm the only and first one in my family to pursue a Ph.D. I think I can give a lot back by teaching.

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NORMAN HURLEY

Hometown: Bellwood, Illinois
Undergraduate Institution: University of Illinois at Urbana-Champaign
Major: Political Science
Year of Graduation: 1988
SROP: 1987
Research Assignment: Political Science
Graduate Degree Objective: Ph.D.
Discipline: Political Science

I grew up on the south side of Chicago until we moved to a suburb called Bellwood when I was almost ten years old. I was in accelerated classes, made the honor roll, and would always have an arm load of books walking down the hallway. Everyone knew me as being intelligent or capable and they came to me for advice on things, even older classmates. I developed a kind of 'nerdy' reputation. I didn't like it, but I had a sense of inner peace, if you will, based on the knowledge that I would most likely do well in our society as a function of education and achievement.

When I was a senior in high school I wanted to go to law school. I knew a lot of lawyers and I asked them what would be the best major. At the time I didn't know that any major was okay. They recommended political science, so I majored in political science. I changed my mind about law after an internship in Washington, D.C., as an assistant to a criminal prosecutor. I got a chance to see the profession up close, or at least a part of it, and I became disenchanted with law.

I had participated in the SROP the summer before my internship. The Graduate School office sent out flyers to all minority students who had GPA's above a certain level. At the time, the money attracted me; they were offering over $2,000 for the summer. I hadn't made that much money in one summer working at McDonald's, so I decided to try it out. I must admit, at the time, I really didn't understand the nature of research. Although I was being led along by my mentor, I worried about living up to the expectations of writing a scientific paper. However, I think the summer research program is very effective. It is the idea that people were interested in me pursuing a higher degree and they believed in me. They were encouraging me to do something more and that meant a lot.

When I returned from Washington D. C., my summer research mentor, who is now the head of our department, listened to my concerns about entering the legal profession and encouraged me to try graduate school. I was his research assistant for two years after the SROP and I always kept in touch with him because he was kind of like an uncle to me. In fact, he was the most influential person in my decision to pursue a Ph.D. He said that I was the curious type who would be more fulfilled in graduate school. My family, on the

other hand, wanted me to be a lawyer. They kept insisting, up until last year, that I stop graduate school and go to law school. I don't get the impression that they're actually excited about it. I think my brother is coming to understand what it means to get a Ph.D., but he's in the corporate world and to him understanding obscure concepts doesn't matter—just the bottom line.

Stamina, motivation, the will to master things, and just the will to succeed are necessary to pursue the Ph.D. I think that 70% of getting a Ph.D. is just stamina. There is a temptation to stop what you're doing because a lot of people with whom you graduated from college are making decent money and you're still living on poverty wages. Constantly there are new things to learn, as far as mastering new concepts, reading all the new literature that comes out as well as learning statistical procedures, learning all about computers, and so on and so forth. This is in combination with the undertones of racism that I have experienced in the classroom...as if I couldn't possibly do excellent work unassisted. You just can't get overwhelmed by it.

My current area of interest is American politics. I'm looking at the impact of race in American politics. More specifically, I'm looking at the role of stereotypes and the nature of political ideology in forming racial policy preferences. I'm at the dissertation writing stage. I should have one more year then I hope to be a professor at a major research institute. I want to build my reputation in studying race in American politics from a psychological standpoint. The purpose of my research is to become a producer of knowledge. I think these are important things to address and I'm not sure that the people who are currently doing research on race have looked at the phenomenon quite the way that I am, so I think it's important. My real passion is to better race relations through education.

JAMES D. ANDERSON

Professor of Education
Faculty Mentor

Years of Academic Teaching: 18
Years of Involvement in SROP: 5

The summer research experience does more than just get an individual faculty person involved; it becomes a departmental affair. When I was assigned five students one summer, we used a centrally-located conference room to do a lot of work tutoring and planning strategy for the research program. Department heads and other faculty would venture in and become curious to know who these people were and they started meeting them. After a couple of weeks, the students knew all of the faculty along the corridor, so it became a departmental affair.

One of the problems that African Americans face, along with other students of color is the notion, the basic assumption in academia, that the only reason they don't have a fair proportion of African American students in graduate school is because they don't have the talent pool. The summer research program impacts that perception, especially when you have *five* students. All of a sudden it's more than one, it's more than the rare bird or the unique individual. It allows the department to see there *is* a talent pool and that the next step is not so much to find talent; the problem is to recruit and to plan for it. It really places the ball back in the department's court.

The point I want to make is that it challenges the stereotypical assumption that if students of color do come to graduate school, it's a one-way drain. That faculty have to spend a lot of time nurturing, a lot of time helping them to overcome deficiencies in background and preparation. These students let people know that it's actually a two-way street; that they have a lot of ideas, a lot of creativity, a lot of energy,and a lot of qualities. They challenge us. They inspire us. We have as much to gain from them as they have to gain from us. It destroys the stereotype.

My view is that when African American students come out of their cultures, there's not only intellect, but there's a certain style, a certain way of doing things. When they have it all together, they can be really dynamic. People look at that and if they don't have a healthy concept in terms of their own humanity, the response can be racism or prejudice. This may result in taking the best and brightest African American students and ignoring them, putting them down, or turning away from them. On the other hand, indifference is even more sinister. It says, "Well, if you're good then do it on your own... I'm not going to push you, I'm not going to help you." My biggest concern is that these types of environments could produce African American scholars who in the long run don't overcome

what happens to them. Because of this sort of beating down, many of them spend their lives trying to prove that they're better than people think. That kind of competition is unhealthy because every situation becomes a competitive sort of game where they have to demonstrate anew that they are, after all, good or superior.

Students who have had a summer research experience know what to expect when they enter graduate school. It's not as much of a culture shock in terms of the academic culture, research culture, or the use of things like research paper methods and techniques of investigation; it's a language that they understand and it's a process that they've been through; they know there's work to be done and they are not in awe of the process. I think that's what makes the difference.

Building relationships between students and faculty in a research environment is an important strength of summer research programs. Providing research opportunities for the students with faculty of color, something very rare particularly in predominantly white research universities, is a major strength as well. A lot takes place between faculty and students of color. One of the benefits is simply to keep students aware of the reality of not only their own situations, but also of the collective experience of black or latino people; a sense of what's real and what's the hype; a recognition that they have stepped outside of their culture and the values of the community. It also gives us a chance to transmit culture and history. The relationship, I think, is critical as it helps students to understand the nature of the challenges they will face. I could go on, and on, in detail, on the strength and importance of the relationship between faculty and students, but most importantly, students gain a good sense of what research is all about—the experience of doing it, of knowing that they can do it. It's exciting.

ELAINE J. COPELAND

Associate Dean of the Graduate College

Years of Employment at the University: 18
Years of Involvement in SROP Management: 7

In 1989 the Chief Executive Officers of the Committee on Institutional Cooperation (CIC) institutions—the University of Chicago, University of Illinois, Indiana University, University of Iowa, University of Michigan, University of Wisconsin-Madison, Michigan State University, University of Minnesota, Northwestern University, Ohio State University, Pennsylvania State University, and Purdue University—established the Alliance for Success. We agreed that we would develop cooperative arrangements with six Historically Black Colleges and Universities (HBCU)—Coppin State, Jackson State, Lincoln University in Pennsylvania, Prairie View, Texas Southern, and Xavier University—in recognition of the need for intra-university cooperation to increase minority access. We selected these particular HBCU institutions to take advantage of CIC connections at these schools given the fact that we had little lead-time for planning. For example, the President of Lincoln had been Associate Vice President at Michigan, the President at Texas Southern had been director of a minority CIC program and a professor at Indiana. We also had ties to Xavier because of some of our graduates. We established cooperative arrangements with those institutions. This past summer, the institutions that were represented included: Alabama A & M, Alcorn, Coppin State, Fort Valley, Jackson State, University of Maryland-Eastern Shore, North Carolina A & T, Southern A & M, and Xavier. Currently, we are trying to establish cooperative arrangements with Hispanic-serving institutions.

Although I believe that we have institutional commitment, I also know that we do not have permanent funding for this program yet, even though our program is one of the largest in the Alliance. We have requested a permanent line in the State budget, but because of all of the cut backs, we've had no new funds, but we've continued to get support. We have to work hard at it.

We are the only institution that has a cooperative undergraduate connection. We feel this is important because we want to be established as a campus level program rather than just a graduate college program. This is especially helpful in getting the faculty members to work with the students, in addition to the fact that they get a small research allowance. Our advisory committee is made up of a representative from every undergraduate college. Our on-campus applications come through the undergraduate colleges.

We have been quite successful in getting students to go on to graduate school here. By having students come and spend time on campus during the summer, I think they find it's a good place to do graduate work. The fact that there is a minority community here is a strength. It also has to do with the departments becoming more sensitive to working with students of color. I think departments now look closer at students who have participated in the national SROP. I would say that most of the students that have applied, and who have participated in the summer program, have been admitted. Faculty often write strong letters of recommendation and I think that has helped.

Every summer we bring students together from all of the CIC institutions for a conference. We have three or four students to present the research that they did the year before in an auditorium where there will be 600-700 students. We have group sessions where one or two faculty members in a particular discipline talk about their research. The faculty also encourage students and give them a sense of what it's like to be a faculty member. The other thing that I think happens, especially with some of our American Indian, Latino, and some of our African American students who are in disciplines where they're so few, is that they get there and say, "Hey, there's someone else like me." Our first Ph.D. who participated in SROP from any of the CIC schools graduated from Michigan. He was in that 1986 group at the University of Chicago and is now a professor at the University of Michigan. He came and served as a keynoter and showed the students, by example, that this program really works.

HOWARD UNIVERSITY
Washington, D. C.

Howard University Summer Research Program

Years in Existence: 5

Number of Students per Summer

1989: 30
1990: 65
1991: 28
1992 18
1993: 21

Participating Departments: Biochemistry, Biology, Chemistry, Civil Engineering, Electrical Engineering, Genetics, Mathematics, Microbiology, Pharmacology, Psychology, Mechanical Engineering, Physics, Physiology.

SALOME COCHRAN

Hometown: New York, New York
Undergraduate Institution: Duke University
Major: Psychology
Year of Graduation: 1991
SROP: 1990
Research Assignment: Psychology
Graduate Degree Objective: Ph.D.
Discipline: Psychology

I grew up in Queens and Long Island, New York. I went to high school on Long Island at a predominantly white institution. Overall, it was an okay experience. I was involved in a lot of different activities, from drama to music to track. When I was in high school, I never thought about going to graduate school, definitely not into a Ph.D. program. My focus was completely different. At the time, I either wanted to go into the theater or be a doctor, a medical doctor, but that changed when I went to Duke. I found myself in psychology. In high school I had a chance to take one psychology class in my senior year and I found it interesting. I guess I fell into the idea of going to the graduate school by accident, just looking for a job. I first started working in a hospital because at that time I wanted to be a doctor, so I thought I would get in a hospital. I worked with cancer patients, in recreation therapy and although it was interesting, I realized that I didn't want to be a doctor. It allowed me to see the medical profession up close and personal. Doctors don't really have time to sit down and talk to people, and that's what I really like to do.

I fell into research by accident. A job working in a sickle cell laboratory pretty much fell into my lap. I still didn't think about going to graduate school. I wasn't really doing my own research, I was helping someone else doing data entry and interviewing. One day I saw a flyer on the wall about the Howard University Summer Research Program. No one had ever told me about SROPs. I was admitted and attended the program where I had my own research project which looked at how violence in the urban cities is affecting kids in the third, fourth and fifth grades. I went back to Duke a changed person. Learning what research really was and what part I could play in a research project was comforting. The people around me—faculty mentors and other students—were really supportive. I was stretching myself; learning a little statistics, writing an abstract, pulling off a presentation. I knew more about what graduate schools look for and, for the first time, thought, ".. maybe I'll go to graduate school." I changed my major from pre-med to psychology, initiated an independent research project, and decided to do a senior thesis.

The summer program was one of the reasons why I came to Howard for graduate school. It really made me think about what a research career really was and what I could do in it. It was a fairly realistic view of what graduate school was going to be. I'm work-

ing on the same project on violence that I was working on when I came here as a summer research student. When I get my Ph.D., I may counsel chronically ill children and their families in a hospital setting or continue my work on the effects of violence on children. In either case, I plan to continue doing research.

My advice to those considering a graduate degree is to make sure this is something you really want to do. One of the best ways of doing this is by getting involved with research as early in your undergraduate career as possible. Once you enter a doctoral program, the commitment is immense and dedication is very important.

ALANA MICHELLE HARRIS

Hometown: Hampton, Virginia
Undergraduate Institution: Hampton University
Major: Biology
Year of Graduation: 1990
SROP: 1989
Research Assignment: Microbiology
Graduate Degree Objective: Ph.D.
Discipline: Microbiology

I grew up in Portland, Virginia, which is in the Tidewater area. I'm a person of instinct and I've always liked science. I'm also a person who has a tendency to get bored, and in science there is always something happening. I want to know what is the next question, the next answer, the next step. That's why I like science. It keeps my attention. I attended a magnet high school with various tracks such as life, health and environmental science and architecture. It was more than your basic public high school. I had to apply for entry and maintain a "C" average.

My first summer research experience was at the Howard University Summer Research Program. Ultimately, I applied to Howard because I had an extremely positive experience in the summer research program. The program helped me to figure out what I really wanted to do in life. My current advisor is also the faculty mentor who I worked with in 1989. She was very, very encouraging. My expectations were to come out with more knowledge about science then I did when I entered this program. Also, I wanted to learn something about myself. I was concerned about whether or not I would be able to cut the mustard. When I first heard that we had to do a 20 minute research presentation, I almost died—I wanted to go home right then and there! But, I did it and now I give seminars every semester.

The following summer I worked as a research intern at a predominantly white institution. I can vividly remember an incident that had a tremendous impact on my decision to continue my education. I was working with enzymes to degrade RNA, which causes me to have an allergic reaction. When I went to the supply room to ask for gloves, the attendant automatically assumed (and said so), that I needed gloves to wash the dishes. I felt so insulted. It clicked, right then and there, I was going to get my Ph.D.

I know from my experience that summer research programs are very important. Especially if you have doubts about your capabilities. Either you enjoy what you do and say you want to do it later or you say this is not for me. In the final analysis, I had a good experience learning some basic things about molecular biology. As a matter of fact, I didn't like it at first. People in the lab at Howard said that everything revolves around molecular biology. Now I'm back here pursuing a doctorate in the field! My area of research is in molecular biology and my research project is specifically entitled,

"Analysis of Messenger RNA Connective Tissue Proteins in Transformed and Normal Cell Lines."

Idealistically, my plans are to get a postdoctoral position, do more research, get published, and then go into academia and be someone's role model myself. I've had so many good ones here. My advisor is an especially good role model who has been very supportive. I couldn't ask for a better person. As matter of fact, one of our faculty members has secured a grant which involves working with high school and maybe even elementary school teachers in letting their students know that they can get a Ph.D. They've asked me to come and talk. I'm going to do it because we need to care more.

MATTHEW GEORGE

Professor of Biochemistry
Faculty Mentor

Years of Academic Teaching: 9
Years of Involvement in SROP: 4

I'm from the South—Alabama. I grew up in the mid-sixties. As a child, everything that I heard was about what Blacks *couldn't* do. Once the Civil Rights laws came into play, you were still being held back because you didn't have enough education for this or the other. So I decided to get an education.

I've experienced all forms of discrimination and racism, be it both overt and subtle. I've seen it also from both sides because I was one of what they used to call the "brickyard kids." That means we grew up in the projects. Unfortunately for me, and my high school, the high school counselor that we had was from the honeysuckle circle, honeysuckle hill—the true middle class Black people— and they didn't think that we who lived in the project had potential for doing anything good. As late as the eleventh grade, I had no aspirations at all of going to college. First of all, I was the oldest of eleven and my mom and dad said "All we can do is get you through high school." Fortunately, fate stepped in and we had a new high school counselor when I was a senior who examined the records and realized that I was doing extremely well in school. Actually, I had the second highest grade point average in the entire school. So she called me into her office and said, "What are you going to do about college?" I told her that I was not going to college because it takes money and my family didn't have it. My plan was to get a job and help my family. Extremely naive. My world was extremely small. I was taught that you go to school, you listen and you do what you are told and everything will work out okay. I was accumulating good grades because that was what I thought it was supposed to be about. Eventually I ended up going to a small Black college in Texas called Wiley College, which is in Marshall, Texas.

The reason I ended up in science was based on the fact that in our high school there were two tracks: a vocation or business track and a college prep track. Science cost nothing to my family, whereas, if I was on the business track, we would have to pay $35 for typing and supplies. At Wiley I was really interested in Civil Rights. I became more aware of the politics going on in the world and I was really fascinated by socio-political change. I thought that I would major in political science. My college didn't have a major in political science, so I ended up in biology and I have not regretted it since.

I thought that a bachelors degree would be enough. Then one of my professors told me about a summer research program in Atlanta. Previous summers I went home and either cut grass, swept, mopped, or went to work at the steel factories in Birmingham. At the

end of my junior year, I had an opportunity to do research in a summer program at Atlanta University. I worked in molecular biology. I was fascinated to the core, so I decided I needed at least a masters degree in biochemistry. I only applied to one graduate school—Howard University. This was followed by a co-op program at Lawrence Livermore Laboratories in California and a doctoral program at the University of California at Berkeley, where I had my first true cultural shock. I actually experienced that at Livermore, but that was okay because I could go to work and go home and not really worry about being the only Black person in class. In addition, the style of teaching was different; you now had to learn facts and know how to apply them. It was kind of frightening, but I did it. I went through the program with what I felt was the weight of the world on my shoulders; feeling that if I didn't do well, they would not admit anybody else like me. Within two years, I was one of the first people in my class to get a paper published in a journal.

We serve a great purpose in terms of the fact that we can turn African American students on to higher education, which has always been my goal—to always give something back. I don't give my students make-do work. I give them something that I'm actively involved in, too. I try to give them a project that will produce original results and original data. I think it's our job to get them excited about research. We have to nurture them and encourage them. As faculty members, we have to serve as role models because many of these young people really are not aware of the opportunities.

JOHNETTA G. DAVIS

Associate Dean for Student Relations

Years of Employment at University: 21
Years of Involvement in SROP Management: 4

We consider the summer research program a recruitment program. If you were to ask my Dean about it he would call it an enrichment program because he looks at it from the students' perspective. I look at it from the perspective of encouraging those students who have promise to consider graduate education, and to give them a taste of what graduate education is like in reality. We set up some broad guidelines with the faculty beforehand so that the student goes directly to the laboratory and begins working. At the end of eight weeks we expect a product to be presented at the research forum. For most of them, it is the first time they have ever made a formal research presentation.

In the main, the students are tremendously bright and have good potential. First, they participate in this application process which is a bit complex; they have to say what it is they want to do with their lives and our advisory group makes some decisions based on that. When we take the decision to our faculty committee, we have the descriptions of the students on a spreadsheet and they fight over who will get whom. I am surprised at how excited our faculty is about the program. Our program is pretty much designed for science and engineering students. In the beginning, we wrote a letter asking for faculty to volunteer, and at our first meeting we couldn't get into the room—it was that full of faculty!

The students spend most of their time and energies in the laboratories. There is no classroom component. On Fridays we visit national area laboratories, libraries, and museums. We also offer a GRE prep course. Since many of the students are from smaller schools and smaller towns, we make sure they know about activities that are going on and we have an orientation session where we talk about safety issues living in the Washington D.C. area. In fact, we call every parent before the students arrive. I share my home and work telephone numbers and invite them to call me if they have any questions or concerns. I assure them that I am going to do my best and my staff will do their best to assure a safe and productive summer for their children.

I think the major strengths are the quality of the faculty and the quality of the experiences they try to give the students. We also have graduate student mentors, which is an important feature of this program. The limitation, I think, is that the program is too small. We are missing a golden opportunity. I trust that we will get past this period of intense retrenchment, but we should eventually put some of our own resources into it.

because I think that's what it takes. Also, because this program is primarily sponsored by Government grants, it is need-based. Many times we've had to turn down really fine and promising students, and that's a weakness, too. If the university were funding it, we'd have more latitude.

My advice to other institutions thinking about starting SROPs is, "Do it!" I think the summer program, more than anything else, really helps these young people understand that a Ph.D. is attainable. It is a lot of work and a lot of fun. Each time we do it, we learn how to make it better.

COMMENCEMENT

The profiles presented in this study give us cause to celebrate the resilience and optimism of those involved in the SROP enterprise, especially the young scholars from traditionally underrepresented groups who are succeeding against substantial odds. It is preeminently a testament to the tremendous results demonstrated when the *will* to succeed aligns with the means to do so.

Current knowledge and past lessons have provided us with a portfolio of strategies and tools as well as understanding of the conditions that go toward fostering the successes of students of color in the pursuit of the Ph.D. Clearly, the SROP model is one effective way to secure the pathway for these students. Those fortunate enough to successfully negotiate an undergraduate program are shepherded through the SROP into a community of scholars where they forge meaningful relationships with graduate students, faculty, departments, and institutions. These relationships are the cornerstones upon which students are empowered to conquer their own doubts, as well as residual faculty resistance to admitting students of color who may be considered "risks" into the research community .

The relationship factor is of paramount importance. Most often, programs are aimed at preparing students to fit into, adjust to, or negotiate the system, but do almost nothing to address the institutional barriers that currently exist. Rethinking current models and old paradigms embodies tougher challenges, i.e., the "traditional model" to weed out people when the fit is not right; the faculty reward/incentive structure; the affirmative action hiring processes; and the role of teaching in a research institution, etc. These issues, among others, are currently being debated in academe and will, we hope and expect, grow into a larger, more urgent, more timely national debate. In the interim, it is the dynamic nature of the relationship between students of color and faculty members that ultimately build bridges among individuals and institutions leading to partnerships, collaborations, and networking activities. These possess the potential to enhance and increase participation at all levels of graduate education.

The circle of inclusion, however, must be expanded from this small base. Many students of color have been given little attention and often fall in the cracks. Most programs rarely, if ever, reach out to students who may be considered "average" or who possess less than superior academic performance. Supply and demand is one contributing factor. The programs profiled in this survey each receive five-to-ten times more applications than they have the resources to accommodate. Additionally, faculty often view "average" students as less capable, therefore requiring more attention.

Nevertheless, the efficacy of exposure to challenging, stimulating research environments cannot be denied. This exposure could well be the spark that ignites the motivation of these students to continue and excel in their undergraduate programs thereby increasing the number of college graduates eligible for graduate study in the near future.

Furthermore, to complete the circle of inclusion, graduate faculty and departments must nurture, diligently monitor, seek out, and welcome SROP alumni and other Ph.D. recipi-

ents into academic communities as full, equal citizens. For ultimately, faculty, more than any other individuals, have control and responsibility for admitting students, for providing financial support, and for creating environments that will enhance success.

As we approach the next century, the beginning of a new millennium, we must, with deliberate speed and effort, overcome the state of inertia existing within the graduate enterprise. As Winston Churchill observed:

It is no use saying "We are doing our best."
You have got to succeed in doing what is necessary.

APPENDIX

SROP DIRECTORY

Appalachian State University
Accessibility to Graduate Education for Minorities

Contact: Glenn Alston
Assistant to the Dean
Graduate Studies/Research
Walker Hall
Boone, NC 28608
(704) 262-2130

Baylor College of Medicine
SMART (Summer Medical and Research Training) Program

Contact: Gayle R. Slaughter
Director, Special Projects
Graduate School
One Baylor Plaza
Houston, TX 77030
(713) 798-5915

Bowie State University
Ronald E. McNair Postbaccalaureate Achievement Program

Contact: Ida G. Brandon
Dean, Graduate School and Continuing Education
Graduate School
Bowie, MD 20715-9465
(301) 464-6586

Brandeis University
Ford Summer Fellowship

Contact: Sarah Dustin Smith
Program Coordinator
Office of Dean of Arts & Sciences
Waltham, MA 02254-9110
(617) 736-3456

Brooklyn College of CUNY
Minority Access to Research Careers

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Dean, Graduate Studies and Research
2900 Bedford Avenue
Brooklyn, NY 11210
(718) 951-5252
E-Mail: FBBBC@CUNYVM.CUNY.EDU

Brown University
Summer Research Early Identification Program

Contact: Ruth Sinton
Assistant to the Associate Provost
Box 1963
Providence, RI 02912
(401) 863-7992

Bryn Mawr College
Mellon Minority Scholars

Contact: Jane Hedley
English Department
Bryn Mawr College
Bryn Mawr, PA 19010-2899
(215) 526-5306

California Institute of Technology
SURF (Summer Undergraduate Research Fellowships)

Contact: Carolyn Merkel
Director, Surf Programs
Caltech-Mailcode 139-74
Pasadena , CA 91125
(818) 397-2885
E-Mail: URF@ROMEO.CALTECH.EDU

California State University, Chico
Pre-Doctoral Scholars Program

Contact: Elaine Wangberg
Dean, Graduate School & VP for Research
Graduate School
Chico, CA 95929-0875
(916) 898-5071

California State University, Fresno
Minority Undergraduate Summer Enrichment Program- MUSE

Contact: Vivian A. Vidoli
Project Director
5241 N. Maple Avenue
Fresno, CA 93740-0051
(209) 278-2448

California State University, Los Angeles
NSF-REU (Research Experience for Undergraduates)

Contact: Anthony Fratiello
Professor of Chemistry
Chemistry Department
Los Angeles, CA 90032
(213) 343-2300

California State University, Northridge
Minority Access to Research Careers Program (MARC)

Contact: Maria Elena Zavala
Associate Professor/Director
Biology Department
18111 Nordhoff Street
Northridge, CA 91330-0001
(818) 885-3342

Case Western Reserve University
Summer Program in Undergraduate Research (SPUR)

Contact: Evelyn Charna
Program Coordinator
Biomedical Science Training Program
School of Medicine, E406
Cleveland, OH 44106-7027
(216) 368-3347

Central Washington University
Ronald E. McNair Postbaccalaureate Achievement Program

Contact: Raymond Resnyk
Graduate Studies and Research
Ellensbur, WA 98926
(509) 963-3101

Claremont Graduate School
Ronald E. McNair Postbaccalaureate Achievement Program

Contact: T.L. Parrish
170 East 10th Street
McManus Hall 225
Claremont, CA 91711-6163
(714) 621-8171

Clark Atlanta University
Master's Institute

Contact: Larry Walton
Director, Master's Institute
J.P. Brawley Drive at Fair St.SW
Atlanta, GA 30314-4389
(404) 880-8857

Clemson University
Women and Minorities in Science and Engineering

Contact: Dewitt Stone
Assistant VP, Academic Affairs
Moorman House
Clemson, SC 29634-5120
(803) 656-2344

Cleveland State University
STARS Mentoring Program

Contact: Earl R. Anderson
Professor of English, Director of STARS Project
Fenn Tower #1111
1983 East 24 Street
Cleveland, OH 44115-2403
(216) 687-4563

Colorado State University
Summer Research Program for Minority Undergraduates

Contact: Stephen A. Benjamin
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208 Administration Annex
Graduate School
Fort Collins, CO 80523
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SBENJAMIN@VINES.COLOSTATE

Columbia University
Minority Summer Research Program

Contact: A. Ayanna Boyd-Williams
Director, Minority Affairs & Special Programs
Graduate School of Arts & Science
107 Low Memorial Library
New York, NY 10027
(212) 854-3791
E-Mail: ADGAB@ACUVMC

Cornell University
Ford-Mellon Minority Summer Research Exchange Program and MARC (COR) Program

Contact: Eleanor Reynolds
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206 Sage Graduate Center
Ithaca, NY 14853-6201
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Dartmouth College
NSF/REU (Research Experiences for Undergraduates)

Contact: Michael Walters
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Burke Hall
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Hanover, NH 03755-3526
(603) 646-2106

Howard Hughes Medical Institute Undergraduate Biological Science Initiative

Contact: Karen E. Wetterhahn
6045 Wentworth Hall
Dartmouth College
Hanover, NH 03755-3526

The Leadership Alliance Summer Research Intern Program

Contact: Richard W. Birnie
6062 Wentworth Hall
Dartmouth College
Hanover, NH 03755-3526

Prairie View Summer Exchange

Contact: Richard W. Birnie
6062 Wentworth Hall
Dartmouth College
Hanover, NH 03755-3526

PEW Charitable Trusts/NECUSE

Contact: Karen E. Wetterhahn
6045 Wentworth Hall
Dartmouth College
Hanover, NH 03755-3526

Office of Graduate Study: Summer Research Internships

Contact: Richard Birnie
6062 Wentworth Hall
Dartmouth College
Hanover, NH 03755-3526

Duke University
Program for Preparing Minorities for Academic Careers

Contact: Scotty Elliott
Executive Director
Box 90522
Durham, NC 27708-0522
(919) 684-5617

Duquesne University

Contact: Jack Hausser
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Duquesne University
Pittsburgh, PA 15282-1702
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East Central University
Oklahoma McNair Scholars Program

Contact: Duane C. Anderson
Dean, School of Graduate Studies
Ada, OK 74820-6899
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Emory University
Hughes Summer Research Fellowships and NSF/REU: Developmental Process

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Director, Hughes Program in Biology
2017 Rollins Research Center
1510 Clifton Road
Atlanta, GA 30322
(404) 727-4272
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PMARS@LEARNLINK.EMORY.EDU

Florida Atlantic University
Board of Regents' Special Summer Program

Contact: Stephen J. Todish
Research Associate, Office of Graduate Studies
P.O. Box 3091
Boca Raton, FL 33431-0991
(407) 367-3028
E-Mail: TODISH@ACC.FAU.EDU

Georgia State University
Minority Participants in Graduate Education (MPGE)

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Director of Educational Opportunities
GSU, 413 One Park Place South
Atlanta, GA 30303-3083
(404) 651-2464

Hahnemann University
Summer Research Program

Contact: Carl Ealy
Assistant Dean, Minority Affairs
Broad and Vine Streets, MS 480
Graduate School
Philadelphia, PA 19102-1192
(215) 762-7302

Hampton University

Contact: Demetrius D. Venable
Vice President/Research Dean
Graduate College
Hampton, VA 23668
(804) 727-5312

Harvard University
Minority Summer Research Program

Contact: Jocelyn Spragg
Lecturer, Harvard Medical School
260 Longwood Avenue
MEC 435
Cambridge, MA 02138
(617) 432-1342

Howard University
Summer Research Program

Contact: Marlene McNeil
Associate Dean, Student Relations
Graduate School of Arts & Sciences
Washington, DC 20059-0001
(202) 806-7469

Illinois State University
Minority Research Fellowship Program

Contact: Doug Whitman, Director
4120 Biological Science
Normal, IL 61761-6901
(309) 438-3669

Indiana University
Summer Research Opportunity Program

Contact: Laura Grabhorn
Administrative Assistant
Fellowships/Merit Awards
Kirkwood, Room 111
Bloomington, IN 47405-3901
(812) 855-0823

Indiana & Purdue University at Indianapolis SROP

Contact: Sheila Cooper
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Union Building 203
620 Union Drive
Indianapolis, IN 46202
(317) 274-4023

Iowa State University
Program for Biological Sciences

Contact: Bernard J. White
Professor and Chair,
Biochemistry, Biophysics
1210 Molecular Biology
Ames, IA 50011
(515) 294-0022

Research Experience for Undergraduate Students

Contact: Carl J. Bern
Professor, Agricultural and Biosystems Engineering
217 Davidson
Ames, IA 50011
(515) 294-1270

Signal Transduction Training Group

Contact: Philip Haydon
Associate Professor, Zoology and Genetics
339 Science II
Ames, IA 50011
(515) 294-6097

Summer Undergraduate Research Scholarship

Contact: Leverne Seversike
Associate Professor, Aerospace Engineering
328 Town Engineering
Ames, IA 50011
(515) 294-5760

Program for Women in Science and Engineering

Contact: Mary Ann Evans
Assistant to Provost
107 Beardshear
Ames, IA 50011
(515) 294-4317

Summer Undergraduate Work Scholarship

Contact: Leverne Seversike
Associate Professor, Aerospace Engineering
328 Town Engineering
Ames, IA 50011
(515) 294-5760

Research Careers for Minority Scholars

Contact: Loren Zachary
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3021 Black Engineering
Ames, IA 50011
(515) 294-3123

Summer Student Trainee Program

Contact: Lynnette Witt
Assistant Personnel Officer
Ames Laboratory, US Department of Energy
127 Spedding Hall
Ames, IA 50011
(515) 294-2680

Transportation Scholars Program

Contact: Kathleen M. Waggoner
Educational Coordinator, Scholars Program
Civil/Construction Engineering
Room 380 Town Engineering
Ames, IA 50011
(515) 294-8103

Undergraduate Research Internship Program

Contact: Rodney M. Cate
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Research/Graduate Education
College of Family/Consumer Science
126 MacKay Hall
Ames, IA 50011
(515) 294-5982

Jackson State University
Minority Graduate Participation Program

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John Jay College of Criminal Justice
Ronald E.McNair Post Baccalaureate Achievement Program

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Johns Hopkins University, The
SROP of John's Hopkins School of Arts & Sciences

Contact: Shin Lin
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224 Mergenthaler Hall
3400 N. Charles Street
Baltimore, MD 21218
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Kansas State University
Summer Undergraduate Research Opportunity Program

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Lehigh University

Contact: Roy C. Herrenkohl
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5 East Packer Avenue
Bethlehem, PA 18015-3181
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Loma Linda University
Undergraduate Summer Research Fellowship

Contact: Anthony Zuccarelli
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Loma Linda University
Loma Linda, CA 92350
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Marquette University
Ronald E. McNair Post Baccalaureate Achievement Program

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NSF-Research Careers for Minority Scholars

Contact: Jon K. Jensen
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1500 Wisconsin Avenue
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Massachusetts Institute of Technology
MIT Summer Research Program

Contact: Margaret Daniels Tyler
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77 Massachusetts Ave., 3-138
Cambridge, MA 02139
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E-Mail: MARGO@MITVMC.MIT.EDU

MIT Lincoln Laboratory Minority Summer Research Program

Contact: Paul Hezel
244 Wood Street
Lexington, MA 02173
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Medical College of Pennsylvania
Minority Student Summer Research Program

Contact: Pat R. Levitt
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2900 Queen Lane
Philadelphia, PA 19129
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E-Mail: LEVITT@MEDCOLPA.BITNET

Medical College of Wisconsin
Minority Pre-Medical Apprenticeship Program

Contact: Lauree Thomas
Assistant Dean, Minority Student Affairs
8701 Watertown Plank Road
Milwaukee, WI 53226
(414) 257-8734

Medical University of South Carolina
Summer Undergraduate Research Award Program (SURAP)

Contact: Henry Martin, III
Associate Professor
171 Ashley Avenue
Charleston, SC 29425-2501
(803) 792-9620

Michigan State University
Summer Research Opportunity Program

Contact: Mary Lee Vance
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209 Bessey Hall
East Lansing, MI 48824-1046
(517) 353-5210

Developing Research Expertise at Michigan State

Contact: Linda Leon
DREAMS Coordinator
246 Hannah Administration Building
East Lansing, MI 48824
(800) MSU-9092

General Electric Summer Research Program

Contact: Howard Anderson
GE Foundation Summer Research Coordinator
246 Hannah Administration Building
East Lansing, MI 48824
(800) MSU-9092

Mississippi State University
Combination of Institutions-Star Search Scholars

Contact: William A. Person
Interim Associate Dean
Office of the Graduate School
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New Jersey Institute of Technology
Undergraduate Research Experience (URE)

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New Jersey Institute of Technology
Newark, NJ 07102-1982
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E-Mail: ADMIN1: QUARLESS

New York Medical College

Contact: Marge Riley
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Basic Sciences Building
Room 647
Valhalla, NY 10595
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North Carolina Agricultural & Technical State University
Ronald E. McNair Postbaccalaureate Achievement Program

Contact: Charles Williams, Jr.
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213 Murphy Hall
Greensboro, NC 27411
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North Carolina State University at Raleigh
BRITE Program

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North Dakota State University
REU-EPSCOR-ND

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Northeast Missouri State University
Ronald E. McNair Post Baccalaureate Achievement Program

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Northern Arizona University

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Flagstaff, AZ 86011-5700
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Northern Illinois University
NIU- Minority Participation in Graduate Education

Contact: Irene H. Johnson
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Northwestern University
Summer Research Opportunity Program

Contact: Penny Warren
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Ohio State University
Summer Research Opportunities Program

Contact: Jean D. Dickerscheid
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250 University Hall
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Columbus, OH 43210-1366
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Oregon State University
EDGE (Early Development for Graduate Education)

Contact: Ataa Akyeampong
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Pennsylvania State University
Summer Undergraduate Research Initiative

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707C Business Admin Bldg
University Park, PA 16802
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Penn State University McNair Scholars Project

Contact: Howard E. Wray, III
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417 Old Main
University Park, PA 16802
(814) 865-0459

Penn State University William Penn Project

Contact: Daniel Davis
Directory of Minority Engineering
College of Engineering
University Park, PA 16802

Research Experience in Experimental Pyschology for Undergraduates

Contact: Robert M. Stern
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512 Moore Building
University Park, PA 16802
(814) 865-1712

Pepperdine University
Summer Undergraduate Research Program

Contact: Stephen Davis
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Malibu, CA 90263
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Princeton University
Princeton Summer Research Experience

Contact: David N. Redman
Associate Dean, Academic Affairs
201 Nassau Hall
Princeton, NJ 08544-0270
(609) 258-3032

Purdue University
Purdue-MARC/AIM Summer Research Program

Contact: Victor W. Rodwell
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Biochemistry Building
West Lafayette, IN 47906
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Queens College of the City University of New York
Summer Program for Undergraduate Research (SPUR)

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Dean, Mathematics and Natural Science
65-30 Kissena Boulevard
Flushing, NY 11367-0904
(718) 520-7151

Mellon Minority Fellows Program

Contact: Elaine Maimon
Dean of Experimental Programs
Flushing, NY 11367
(718) 520-7762

Rutgers-The State University
Biomedical Careers Program

Contact: Francine Essien
Director, Minority Undergraduate Science Project
204 Records Hall
New Brunswick, NJ 08903
(908) 932-6878

South Dakota State University
EPSCOR ADP

Contact: David A. Benfield
SDSU EPSCOR ADP Campus Coordinator
ADR 102, Box 2175
Brookings, SD 57007-2298
(605) 688-5171

Southern University
MBRS

Contact: Frederick Christian
Director, Health Research Center
Southern University
Baton Rouge, LA 70813
(504) 771-4240

Research Careers for Minority Scholars

Contact: Diola Bagayoko
Director, TIMBUKTU Academy
P.O. Box 11776
Southern University
Baton Rouge, LA 70813
(504) 771-2730

Engineering Summer Institute for Incoming Freshmen

Contact: Thomas L. Henderson
Director, Engineering Institute
Southern University
Baton Rouge, LA 70813-9552
(504) 771-3798

Minority Access to Research Careers

Contact: Frederick Christian
Director, Health Research Center
Baton Rouge, LA 70813
(504) 771-4240

Cooperative Education (COOP)

Contact: Julie Wessinger
Associate Director, Cooperative Programs
Southern University
Baton Rouge, LA 70813
(504) 771-2200

Stanford University
Minority Summer Research Exchange Program

Contact: Geneva Lopez
Assistant Registrar
Room 100, Old Union
Stanford, CA 94305-2074
(415) 725-1808

Stanford Linear Accelerator Center(SLAC) Summer Science Program

Contact: Teresa Cervantes
(415) 926-2353

AEA Summer Minority Program for 1993

Contact: Susan A. Maher
(415) 723-3653

Stanford Summer Research Program in Biomedical Science

Contact: Tim Westergren
MSOB Room 309
Office of Graduate Affairs
Stanford University
Stanford, CA 94305
(415) 723-9455

Martin Luther King Jr. Papers Project

Contact: Cypress Hall D Wing
Stanford, CA
(415) 723-2092

State University of New York at Stony Brook
Minority Research Apprenticeship Program/Research Experience

Contact: Ernest McNealey
Associate Vice Provost, Graduate Studies
E3320 Library, SUNY
Stony Brook, NY 11794
(516) 632-7080

Summer Research Scholarships at Center for Highpressure Research

Contact: Donald J. Weidner
Director, Mineral Physics Institute
Department of Earth and Space Science
SUNY at Stony Brook
Stony Brook, NY 11794-2100
(516) 632-8241

Syracuse University
GE Foundation Faculty for the Future-Undergraduate Research

Contact: Richard Pilgrim
Assistant Dean, College of Arts & Sciences
Hall of Languages
Syracuse, NY 13244-1200
(315) 443-3861

Temple University
Summer Research Program for Women/Minority Undergraduates in Science

Contact: Peter Goodwin
Director, Summer Graduate School
501 Cornell Hall
Philadelphia, PA 19122
(215) 787-8229

Texas Southern University
Women and Minority Participation in Graduate Education

Contact: Mary Ann Galley
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3100 Cleburne
Houston, TX 77004
(713) 527-7155

Thomas Jefferson University
Summer Internships in Biochemistry

Contact: Edward Winter
Assistant Professor
233 South 10th Street
Philadelphia, PA 19107
(215) 955-4139

Tufts University
Summer Research Program for Undergraduate Minority Students

Contact: Peggy Newell
Assistant Dean, Sackler School of Graduate Biomedical Science
136 Harrison Avenue
Sackler School
Boston, MA 02111
(617) 956-6767

University at Albany, State University of New York
Summer Bridge Programs for Minority Science Students

Contact: Carl Martin
Assistant VP, Student Services
CC137, University at Albany
1400 Washington Avenue
Albany, NY 12222
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E-Mail: SSVMAD (DAVINCI)

University of Alabama at Birmingham
Alabama Alliance for Minority Participation Summer Internship Program

Contact: Louis Dale
Associate VP, Academic Affairs
216 Education Building
Birmingham, AL 35294
(205) 934-6137
E-Mail:
UCAM011@UABDPO.DPO.UAB.ED

University of Alabama in Huntsville
Research Experiences for Undergraduates

Contact: A. Gordon Emslie
Chair, Department of Physics
UAH
Huntsville, AL 35899
(205) 895-6276

University of Alaska Fairbanks
An Alaskan Summer Research Experience for Undergraduates

Contact: Lawrence K. Duffy
Professor of Chemistry & Biochemistry
Department of Chemistry
Fairbanks, AK 99775-0520
(907) 474-7029

University of Arizona
ACCESS

Contact: Associate Dean, Minority Affairs
Administration 322
Graduate College
Tucson, AZ 85721-0001
(602) 621-9192

University of California, Berkeley
Summer Research Opportunities Program

Contact: Pamela D. Jennings
Assistant to the Dean, Student Diversity
424 Sproul Hall
Graduate Division
Berkeley, CA 94720
(510) 643-6010

Summer Undergraduate Program in Engineering Research

Contact: Sheila Humphreys
331 Corey Hall
EECS Department
UC Berkeley
Berkeley, CA 94720
(510) 643-8205

University of California, Davis
Summer Undergraduate Research Program in Science and Engineering

Contact: Adell B. Bynum
Summer Program Coordinator
Graduate Studies
252 Mrak Hall
Davis, CA 95616-8610
(916) 752-8433

University of California, Irvine
Summer Undergraduate Research Fellowship Program

Contact: Peggy Garcia Bockman
Graduate/Professional Opportunities Program Director
120 Administration
Irvine, CA 92717
(714) 856-5879
E-Mail: BOCKMAN@UDLEDU

University of California, Los Angeles
Minority Summer Research Program and Minority Summer Research Exchange Program

Contact: Harriet Moss
Coordinator, Graduate Affirmative Affairs
1248 Murphy Hall
405 Hilgard Avenue
Los Angeles, CA 90035
(310) 206-1280

University of California, Riverside
Minority Summer Research Internship Program

Contact: Marie Steward
Student Affairs Officer
B-204 Library South
Riverside, CA 92521-0208
(909) 787-3680

University of California, San Diego
Summer Research Experience Program

Contact: Brenda Richmond
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9500 Gilman Drive
La Jolla, CA 92093-0003
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E-Mail: BRICHMOND@UCSD.BITNET

University of California, San Francisco
Summer Research Training Program

Contact: Mary Thompson
Coordinator, Student Affairs
Box 0404, UCSF
San Francisco, CA 94143
(415) 476-8134

University of California, Santa Barbara
Summer Academic Research Internship Program

Contact: Dorothy Nagaran
Mentorship Coordinator
Graduate Division
Santa Barbara, CA 93106
(805) 893-3803

University of California, Santa Cruz
Summer Undergraduate Research Fellowships (SURF)

Contact: W. Todd Wipke
Chemistry Board of Studies
Santa Cruz, CA 95064
(408) 459-2397

Howard Hughes Summer Institute in Molecular/Cell Biology

Contact: Joanne Lopez
Department of Biology
University of California
Santa Cruz, CA 95064
(408) 459-3052

Summer Opportunities for Academic Research

Contact: Rosalee Cabrera
SAA/EOP
University of California
Santa Cruz, CA 95064
(408) 459-2296

University of Chicago
Summer Research Opportunities Program

Contact: Yvette Adeosun
Associate Director, Graduate Affairs
5801 S. Ellis Avenue
Office of Graduate Affairs, Room 223
Chicago, IL 60637
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University of Cincinnati
Minority Access to Research Careers

Contact: Bobbi Handwerger
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College of Medicine
E251 S. MSB
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University of Colorado at Boulder
Summer Minority Access to Research Training (SMART)

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Graduate School Campus Box 26
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University of Delaware
Minority Summer Research Institute

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University of Florida
Summer Research Apprenticeship Program

Contact: Michael J. Phillip
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235 Grinter Hall
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University of Georgia
Summer Minority Undergraduate Mentorship Program

Contact: Gordhan L. Patel
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510 Boyd Graduate Studies Bldg
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University of Illinois at Chicago
Summer Research Opportunities Program

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University of Illinois at Urbana-Champaign
Summer Research Opportunities Program

Contact: Elaine J. Copeland
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801 S. Wright Street
Champaign, IL 61820
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University of Iowa
CIC Summer Research Opportunity Program

Contact: James F. Jakobsen
Associate Dean, Graduate College
University of Iowa
Iowa City, IA 52242-1320
(319) 335-2137

University of Kansas
Howard Hughes Research Internship Program

Contact: James A. Orr, Chairperson
Division of Biological Science
Haworth Hall
Lawrence, KS 66045
(913) 864-4301

University of Kentucky
Summer Opportunities in Biological Science/Chemistry for Undergraduate Minority & Women Studies

Contact: Daniel R. Reedy
Dean, Graduate School
359 Patterson Office Tower
Lexington, KY 40506-0027
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University of Maine
Ronald E. McNair Postbaccalaureate Achievement Program

Contact: David Megquier
35 Shibles Hall
Office of Research
Orono, ME 04469
(207) 581-1476

University of Maryland, College Park
Summer Undergraduate Research Program (SURP)

Contact: Carla Gary
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2122 Lee Building
College Park, MD 20742
(301) 405-4185

University of Massachusetts at Boston

Contact: Michael Larson
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100 Morrissey Blvd.
Boston, MA 02125
(617) 287-6677

University of Medicine & Dentistry of New Jersey
Undergraduate Summer Research Program

Contact: Willie Mae Coram
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185 South Orange Avenue
Room C690
Newark, NJ 07103
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University of Miami
RAMP: Research Academics for Minorities Program and MARC: Minority Access to Research Careers

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McNair Graduate Opportunity Program

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